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The Burlington House and New Gallery Exhibitions.

IT seems both fortunate and appropriate that a collective exhibition of Mr. Watts's paintings should be held at the New Gallery concurrently with the exhibition of Lord Leighton's works at Burlington House. The two exhibitions afford very interesting matter for comparison and contrast. Both artists are, in the majority of their works, painters of ideal subjects, but the ideal is a totally different one. Leighton painted solely for beauty and decorative effect; his pictures have for the most part no intellectual meaning, and certainly they are entirely devoid of any moral or didactic element. Mr. Watts, on the other hand, in painting figures and subjects has professedly aimed at making them the medium for the expression of a moral meaning; in his own words, "the object has been to suggest, in the language of Art, modern thought in things ethical and spiritual." A noble object certainly; the question is whether in striving to carry it out he has not been in danger sometimes of outstepping the proper limits and capabilities of the art of painting, of attempting what had better have been expressed in words, and sacrificing artistic beauty to a moral end.

The collection of Leighton's works is on the whole a very representative one; the only important one which we hoped to find there and missed is the grand picture of "Phryne," a nude figure almost larger than life, at all events of what is called "heroic" size, which some of our readers may remember hanging in the large gallery a good many years ago, just over where the "Daphnephoria" now hangs. This was an impressive work from its large scale and the power of design displayed in it; we should be interested to know what has become of it.

The pictures are all dated, so that we can compare the painter's style at different periods. Up to about twenty years ago, the period of the "Daphnephoria," his art may be said to have been steadily progressive; beyond that date it is fluctuating; he never surpassed the "Daphnephoria," but since that time we have had pictures equal to it in essential qualities of style and colour, mingled with others which were decidedly inferior. The difference between the earlier nudes and the best style of the later period is very well illustrated in the contrast between "Actæa" (49) dated 1868, and the "Bath of Psyche" (51), painted in 1890. In the former the figure is cold in colour and hard and sculpturesque in quality; in the latter, though there is still a certain degree of hardness and artificiality which is inseparable from Leighton's style, there is a delicacy of colour which contrasts strongly with the cold tone of the older work. The "Venus Disrobing" (56), painted in 1867, is another typical example of the time when Leighton was a splendid draughtsman but a poor colourist; the pose in this figure is a very difficult one, and treated with great mastery of drawing. In some of the latest works the artist seems to have dropped again into his earlier style, as in "Summer Slumber" (70), a work hard in texture and inharmonious in colour, and which displayed the artist's shortcomings rather than his powers.

The exhibition of "Cimabue's Madonna" (65) which hangs opposite the "Daphnephoria," and was painted forty-one years ago, furnishes an indication of the progress which has been made in the art of painting in this country since the fifties. Even as the work of a young painter of the age of five-and-twenty, it would hardly in the present day produce a sensation, as probably its author would have readily admitted. It would rank as a very good picture for a young painter who had not yet emerged from the effects of scholastic training. It is methodical and mannered, and has no touch of dramatic reality about it. We have learned since to think more of realising a scene in history, less of merely making a composition of it; and the "Cimabue" is mainly a careful composition, rather stiffly put together in a conventional manner, with a good deal of attention to costume. As its author's first important work it will always retain its interest, but the point of view has altered since it was painted. The contrast between this stiff conventional composition and the "Daphnephoria" opposite is one of the most striking points in the exhibition; the perfectly free and apparently improvised manner in which the procession in the latter picture seems to move along, as if we had just seen it come from round the group of trees, is a triumph of the *ars celare artem*. Among Leighton's larger works this is unquestionably the finest and most successful, both in colour, movement and composition, and in the beauty of the individual figures. Whether the conventional and stage character of the trees which form the background is the result of an intention on the part of the artist to give them a certain decorative flatness and artificial character, so as to prevent their interfering with the effect of the figures, or whether it is only another instance of his apparent want of power to paint landscape with freshness and reality, it may be difficult to decide; but even if the conventionalism were unintentional, it perhaps hardly detracts from the effect of the picture; the trees form a sombre background to the glittering procession, and beyond that office they do not claim much attention. It is curious, however, that an artist who showed such close and patient realism in his pencil studies of trees and plants, should never have succeeded in getting a real-looking tree into a finished picture; the landscape, whether as a whole or in detail, is always, where introduced at all, the weakest part of his work.

The most complete perfection of Leighton's work is perhaps to be found in some of the smaller figure subjects which represent a single moment of beauty of action, pose, and colour, treated with absolute unity of aim and style. Two such works are to be seen in Gallery I., equally perfect though very different in style and colour. One of these is the "Antique Juggling Girl" (15), painted in 1874, an example of decorative design and colour, the value of which no fashions in art can change. As some of our readers may remember, it is a small picture representing a nude girl, whose figure is perfectly drawn and painted, in front of a wide vertical strip of curtain the lines of which are of great value in the composition, tossing four balls, two with each hand, her upturned foreshortened face so completely drawn and made out, in this most difficult position, that the features would be recognisable if one knew the personage before. The other work referred to, "Weaving the Wreath" (6), is even simpler in scheme and still finer in colour; a dark-skinned girl with black hair seated and almost wholly wrapped in a dark purple robe, weaving a wreath of leaves, with a marble basrelief as a back-

ground. The subject is nothing; it is simply a momentary incident of beauty of colour and composition perfectly rendered—a faultless work of abstract art. The two were painted within a year of each other; and to the same period belongs what is perhaps a still finer work of the same class, "Summer Moon" (84), now hanging in, if we remember right, the very same position in the large room in which it was first seen just a quarter of a century ago. This work, popularly known by engravings, may be called superior to the other two not in execution but in the fact that to beauty and unity of composition it adds poetic sentiment. The texture and manner of painting in this picture is very different to Leighton's usual style of execution—much fuller and less flat in texture, perhaps with the intention of conveying better the softened effect of coloured draperies only half seen in the moonlight.

Among the well-known works which will be found here are the "Cymon and Iphigenia" (20) which is not hung to the best advantage in Gallery I.—the scale of the picture demands more space; "Perseus and Andromeda" (32) which we hold to be a greater success in conception and composition than in colour; "The Music Lesson (47); "Captive Andromache" (57); and "Flaming June" (75) which, in spite of the somewhat contorted attitude of the figure, is one of the most powerful and successful of the artist's single-figure pictures.

The Water-colour Room is occupied by a number of sketches and studies, which give remarkable evidence of the care which Lord Leighton bestowed on the study and preparation of his pictures. Not only are there numerous small studies in crayon for individual figures in various pictures, but bronze models in the round for various figures and groups in the "Daphnephoria," for the two figures in "Cymon and Iphigenia," and for the whole composition of the "Hesperides" and the "Perseus and Andromeda." Sketches in the flat for pictorial compositions and for separate figures in them are of course made by all painters who take their work seriously, but the actual modelling of figures which are to be painted in the flat points to a thoroughness of study which is not common in these days, though it was largely employed by Michelangelo. Among the sketches are two or three of small Italian towns nestled among hills, probably made with a view to their use as incidents in the backgrounds of pictures, and the one bit of original design of an architectural nature which we noticed is a sheet of three designs for Mrs. Browning's tomb.

The contrast on coming to the New Gallery and to Mr. Watts's paintings is striking in many ways. Mr. Watts is a great colourist, which Leighton was not pre-eminently, though he produced very fine colour occasionally. Leighton's treatment of the nude figure is generally conventional, in most cases somewhat hard. His figures do not resemble real life because they lack the appearance of softness and warmth; Mr. Watts's aim, on the other hand, seems to be to spiritualise away the flesh into a mere visionary semblance of a figure, with more colour and warmth and less precision of line and anatomy than the reality. In his beautiful "Olympus on Ida" (68), in reality a representation of the Judgment of Paris, we see not so much three goddesses as three visions of goddesses, in the golden haze of a dream. So are "Uldra," the Scandinavian spirit of the rainbow (27) and "Psyche" (88); ghosts of figures rather than realities; though in these two cases the nature of the subject affords an excuse or suggestion for such a treatment. This kind of treatment belongs more especially to the painter's later and more mature period. In the large picture painted in 1848 under the title of "Life's Illusions" (64) we could fancy that the painter had been studying Hilton, so much is there in the composition and the design of some of the figures which recalls some classical composition of Hilton's such as "The Abduction of Helen;" and even in the "Fata Morgana" (84), seventeen years later, there is the same kind of classic elegance in the limbs of the principal figure, though the subject is a moral allegory. The later "Fata Morgana" (109), painted in 1889, it is interesting to compare with the other one; it is unquestionably a finer composition and conception, with less prettiness about it, but it is not equal to the earlier one in colour.

Among the latest class of allegorical paintings we meet with things which must "give us pause," paintings in which moral allegory has quite over-ridden art, and in which the picture requires the explanatory comment before we can find any interest in it. Such are "Faith" (123), "The Dweller in the Innermost" (131), "The All-pervading" (129). These are not so much pictures as puzzles, and we fear it is their fate to be so regarded. There are certain works in which the pictorial grandeur is so evenly balanced with the moral meaning—a moral easy and obvious to every one—that they may be regarded as successes from both points of view. Such a picture is "Love and Death," of which one of the editions, not quite the best, is here; "Love and Life," which is neither quite so obvious nor quite so fine, but which justifies itself; such is "Hope," a poetic vision beautiful both in the poetic and pictorial sense. Such also are "Mammon" and "The Minotaur," for the power with which coarse and evil natures are depicted in these two works is in itself a fascination. "Sic Transit" is also a truly decorative allegorical painting which explains itself. The failure comes where the picture does not explain itself, and where its pictorial motive is not in itself striking. The climax of this mistake is reached in the picture of "Chaos" (148), an attempt to symbolise the evolution of social order out of chaos and confusion; a picture which is bewildering without the explanatory comment, and we fear verges on the absurd with it. The two paintings of Eve—"She shall be called Woman" and "Eve Repentant"—have a noble meaning, which is intelligible enough, but unhappily they are totally devoid of womanly beauty, almost even of natural verisimilitude, and how can such an Eve appeal to our sympathies? On the other hand, the strong draped figure with bowed head, illustrating the verse, "He went away sorrowful, for he had great possessions," is impressive in itself from its dramatic force of expression, and gains an added interest when read with the title, though it does not require that to impress us as a powerful work. The conclusion forced upon one from a comparison of the various moral works is that there is a line in moral and allegorical painting which cannot be safely overpassed. A picture must be a picture in the first instance, to be admired for its pictorial quality; as soon as we come to the point where the moral meaning is the principal point and the pictorial interest secondary, we have got out of the proper region of painting, and might as well have a printed sermon at once.

In one picture in the collection, and which was recently seen at the Royal Academy, the painter has indeed shown us that he can still paint for pure beauty. The "Childhood of Jupiter" is a work so remarkable for beauty of composition and colour, such a pure pictorial poem, without the shadow of a moral about it, that when it was exhibited at the Academy there was an impression among many people that it was a work of the artist's earlier period, then exhibited for the first time. It appears, however, from the New Gallery catalogue, that it was painted only last year, and thus gives us assurance that Mr. Watts can still paint a purely beautiful picture when he can shake himself free from his desire to turn pictures into sermons. Let us hope that there are more such works still to be looked for from his hand.

COLOMBO.

THE first view of Colombo from the deck of a mail steamer coming up from the South is pleasing in the extreme. A few large and imposing buildings, a broad expanse of bright green turf, boldly grouped masses of foliage, and enough palms to show that one is right in the tropics. When the fine and massive breakwater of concrete blocks is turned, the ship swings round into the harbour, and another aspect of the town is opened up. A few large buildings surrounding the Clock Tower, some spacious, wide-roofed warehouses away to the left, and the confused but by no means prominent mass of the low-pitched roofs of the native town, make up the picture.

But no, it is not quite complete; for if the day be fine, there is a background of rolling ranges and distant grey-blue peaks that adds the final touch, and makes Colombo, from the sea, one of those rare scenes that live in the memory when much else is forgotten. When one lands, however, the spell is broken, for the palatial buildings, so prominent in the view from the sea, which should at least be of stone, if not of marble, resolve themselves into stucco showing evident signs of decay and disrepair.

The general design of the older buildings is, however, effective and admirably adapted to the climate. Mostly of one story, they are surrounded by a spacious verandah, with widely-spaced columns of classic detail, carrying a solid-looking roof of reddish-brown tiles, similar to those in common use in Italy. The covering tiles are, however, doubled, to guard against the sheets of rain that fall in the wet season penetrating the laps. Most of the old buildings were erected during the Dutch occupation of the island of Ceylon, and though the detail is poor, the general effect is satisfactory.

It is a pity that as much cannot be said of those put up under the English rule. Buildings of two or even three stories are common, but the detail is quite as poor, and, in addition, is hard and mechanical. The extensive barracks facing the sea are a

striking instance. The new Post and Telegraph Office, only finished about four years since, is, however, somewhat better. It is a building of three stories, the lower forming a rusticated basement. There are no verandahs, but a large open hall, entered from the street by a wide flight of steps; and three archways serve as a gathering place where the public business of the department is transacted. The other principal external features are projecting piers, which in the upper story change into coupled columns. The attempt is ambitious, but the effect is not so impressive as it might be, owing to the most objectionable salmon-coloured wash which covers the cement. A coat of plain lime-white would be infinitely preferable.

Near the landing-stage some new offices are being erected for the Peninsular and Oriental Steam Navigation Company, and here the sloppy character of native bricks and brickwork may be studied, if not with advantage, at least as a warning. It is, however, as good as can be obtained, and one wonders whether the natives have lost the art of doing good work, or have never attained to it. The former appears to be the case, if the written descriptions of some of the old cities and temples of a bygone civilisation are to be trusted. Another and larger work is the rebuilding of a large hotel, a favourite resort about a mile away from the town, enjoying the fresh breezes and facing the rolling surge of the Indian Ocean. There, if anywhere, one would expect that the old and satisfactory system of external verandahs or loggias would be retained. But, alas, the huge pile shows no sign of one at present, and, from the visitor's point of view, the battered and dirty-looking relic of the old building is preferable. This is to be pulled down, and then surely some provision will be made to secure the shade so urgently required.

Of course, every one goes to see a Buddhist temple, of which there are several, but they scarcely repay a visit. One has a dagoba of brick of the type made familiar to us by Fergusson and other writers. It has but few decorative features, and they are in cement. That on the road to Mount Lavinia is perhaps the most interesting, and possesses (or did possess) a few well designed metal finials. The buildings consist of two or three groups, and there are several loggias in which a few yellow-robed priests are sure to be seen praying, reciting, or lounging, or else a class of scholars under instruction. The effect is thoroughly Oriental and pictorially satisfactory.

The great attraction to the visitor is, of course, the varied teeming life of the markets and the native quarter, where brilliant colour studies and figure subjects meet one at every turn. But this is rather the province of the painter than the architect, and although devoted to the latter art, one is seized with a wild desire to change places for a time with our brothers of the brush and, inspired by the wealth of Oriental life all around, to attempt that which even to the accomplished painter would be a difficult task. So it is as well that mail steamers wait for no man, and one is compelled perforce to bid this attractive bit of the glowing East "au revoir," if not "good-bye."

BUILDING TRADE, BLACKPOOL.—The Building Plans Committee, Blackpool, at their monthly meeting on the 29th ult. considered ninety-two plans. Of these seventy-two were accepted, and twenty disapproved.

NOTES.

Peterborough Cathedral.

THE most important feature in the Peterborough correspondence since last week has been the protest of Mr. T. G. Jackson, who, in stating his reasons for refusing to sign what he calls the "irrational petition" which the opponents of the Dean and Chapter are sending round, calls attention to what we have already commented on, that "the appeal, we are told, is being largely signed by persons eminent in literature and various walks in life—persons who have not examined the building themselves, and who, if they did examine it, have not the knowledge of construction and masonry requisite to make their opinion of the slightest value." In reply to a letter by Mr. Micklethwaite in the *Times*, who insinuates that Mr. Jackson's expressed regret that there should be any necessity for rebuilding any part of the front of Peterborough is "conventional," Mr. Jackson pertinently remarks that Mr. Micklethwaite and his companions "allow no one to love an old building but themselves." The letter signed "J. R. C.," another new importation into the controversy, though well meant, unfortunately goes too far. He instances the Portland Vase, which has not suffered in appearance from its breakage and putting together again; but a vase is not a building, and the cases are hardly parallel. Generally speaking, the effect of this controversy, with all calm-minded people who know anything of the subject, will probably be to weaken the influence of the archæological party in these questions; they have overdone the matter even from their own point of view, and have shown such irrational temper and such a disregard for accuracy of statement as must diminish their chance of being listened to on any future occasion. As to some of the newspapers which have been so violent on the subject, their object has palpably been to raise what they thought would be a popular cry, for journalistic purposes.

St. Séverin, Paris.

THE church of St. Séverin, well known as one of the finest examples of late Gothic in Paris, is reported to be in so serious a state of decay that repairs will be required on a scale which the parish has not the means to provide for. It is hoped that the Municipal Council, which is occupied with the question, will supply the funds necessary for its repair, and also for clearing away some of the mean old buildings which cling round it. That is the Parisian view; as to the latter point it may be a question whether it is well to meddle with these hanging-on buildings, which are in many cases a highly picturesque adjunct to French churches and cathedrals, and the removal of which will furnish only too much temptation for restoration in the objectionable sense of the word. In these matters the French are in the opposite case from ourselves; public money can be found for repairs to important buildings where it would never be forthcoming in England; on the other hand, the authorities who supply the funds are apt to want to have too much done for their money.

Pembroke Earthquakes.

AT a meeting of the Geological Society held on Wednesday last, a paper by Dr. Charles Davison was read "On the Pembroke Earthquakes of August, 1892, and November, 1893." He showed that during the former month no fewer than eleven shocks occurred; the principal one being the third; in the latter month there were four undoubted earthquakes, of which the chief was the first one. The author sought to show the connexion between these seismic disturbances and faults or dislocations of the strata in part of South Wales. For more than fifty years prior to the earthquakes of 1892-93 there were no slips of importance along the fault system in Pembrokeshire. Then the earlier movements took place along the north and south faults, and the later along the east and west. The three faults of the latter series which the author connects with the disturbances lie successively one to the north of the other, and there can be little doubt that the fault slips of 1892 affected the conditions of stress along the neighbouring north and south fault. The detailed particulars concerning earthquakes collected by Dr. Davison cannot fail to be of great practical use, though their chief interest, so far as England is concerned, is of a purely philosophical character. The evidence he is accumulating here, however, is in reality available also for "earthquake countries," for should he ultimately prove that seismic disturbances are always connected with faults, and that the position of the latter, either as caused in the first place or as a limiting influence subsequently, determines the distribution of the chief effects of the disturbance, then it will not be difficult to indicate, with certainty, localities which must enjoy comparative immunity from shocks, even in an "earthquake country." We thoroughly agree with Dr. Davison that the study of such earthquakes as take place in England is extremely valuable as supplementing geological surveys.

Iron Curtains in Theatres.

THE fatal accident at Liverpool in one of the Variety theatres, owing to a mishap with the iron curtain, again calls our attention to the great negligence in English theatres in respect to the division of the auditorium from the stage in the case of fire. In the first place, we believe there is no power to enforce any such division in old buildings, unless they are undergoing material alteration; and in new buildings the actual construction of such curtains is practically all the authorities can order. There is no definite policy, either in London or in the provinces, as to which form of "fire-resisting" curtain can be considered efficient, and which type of screen or mechanism should be used. When such a curtain has once been installed, there are no further regulations to compel its constant use, either at the end of a performance or between the acts; nor do the authorities compel the owner or manager to provide a competent attendant, whose sole duty it should be to work the proscenium curtain. The result is that comparatively few old theatres have the necessary curtains, and that the types here, as well as in the new buildings, where they can be enforced, vary considerably, their efficiency often being exceedingly doubtful should need ever arise for their use. We have found, in fact, that a great many of the curtains will not work at all, owing to the want of regular use and attendance. As it is everywhere recognised

that the divisional curtain is one of the prime factors of protection from fire in places of public entertainment, we hold that the subject of their proper regulation calls for special attention and, if necessary, special legislation. Such fatalities as the one at Liverpool should not occur.

Municipal Tramways.

TRAMWAY legislation will be well represented during the coming Parliamentary Session. Some twenty or thirty towns are going to Parliament for authority either to extend their systems or to work the lines. If many of these schemes be carried through the tramway mileage of this country will be doubled within the next few years. The important question that has to be considered at the present time is not so much whether municipalities or private companies should own the lines, as what system of traction is to be adopted. It is generally admitted that in the future mechanical traction will be used in preference to horse traction for tramways. Municipalities would be wise not to adopt any system of overhead trolly wires hurriedly. There are a large number of new methods being tried which avoid the drawbacks of the overhead trolly, so that it is probable that those municipalities who pride themselves on being the pioneers of electric traction in England will, as in the case of electric lighting, have reason to regret their haste. It is instructive to note that in America, where there are over twelve thousand miles of road equipped with overhead wires, the greatest activity is being manifested by electrical engineers in inventing systems of electric traction which will obviate the necessity of the dangerous and disfiguring trolly wire.

The New Opéra Comique.

THE new Opéra Comique at Paris is now complete as far as the building is concerned, and the sketches and models for the interior decoration have been submitted to a special committee presided over by M. Roujon, Director of the Fine Arts Department. The decoration of the cupola of the building is to be entrusted to M. Benjamin-Constant; that of the grand staircase to M. Olivier Merson and M. François Flameng. The sketches for the work seem to promise an interesting scheme of decoration pervaded by a general unity of style and design. The foyer, the vestibule, and the two salons situated at each extremity of the façade, will be decorated by artists who will be selected by the committee during the course of the present month.

Seaford.

MANY persons regret the necessary extinction of the small coast village or town on the south of England, and the growth in its place of the more fashionable watering-place. Such a change may now be witnessed in progress at Seaford, a village near Newhaven, comfortably sheltered by the sloping downs. But it is to be regretted that this transformation does not take place there systematically. Eastbourne has benefited very greatly from the systematic manner, in which—thanks to the town having been built wholly on two large estates—it has been enlarged. At Seaford, on the other hand, the primitive character of the place is already lost, whilst on the other hand it has none of the merits of the well-built watering-place. An unfinished esplanade is ugly and dangerous, picturesque bungalows can only be approached up a muddy lane, which would, perhaps, not be out of place in a Midland hunting shire. A large and capacious pit marks the site of some future terraces, whilst an existing block of houses ends in a moat-like ditch. Towards Newhaven houses appear to rise up here and there, turning their faces and their backs to each other, as the fancy of the owners dictates. As regards aspect and access to the Downs, Seaford is superior to Eastbourne, and the Urban District Council should endeavour to guide its development with taste and knowledge, otherwise it may be spoilt with growth. For after all, a good site and an ancient town go but a little way towards a pleasant, modern dwelling-place, which may be created on any bit of coast, if the persons interested in the locality set to work in a systematic manner, as, for example, at Bexhill.

St. Mildred's, Bread-street, and Thanet-place, Strand.

A BILL has been deposited by the promoters of the City and West-end Railway for an underground line, 64 miles long, to be worked by electricity, between Cannon-street (Budge-row) and Hammersmith. Two of the scheduled sites include Thanet-place, Strand, and St. Mildred's Church, Bread-street, with some adjacent property. As regards the latter, we may quote a passage from Mr. G. H. Birch's work, recently reviewed in our columns (see the *Builder*, June 6 last):—

"If any one wishes to see a perfectly untouched City church just as Wren left it, let him wend his way to St. Mildred's, which is innocent alike of mediæval adornments or nineteenth-century arrangements."

The church contains some excellent iron and brass work, wood-carving, and plaster work in flowers and foliage, well worthy the attention of lovers of seventeenth-century craftsmanship. There is a memorial to members of the Crisp family, parishioners, one of whom, Sir Nicholas (King Charles I.'s devoted friend), is said to have introduced into England a new method of brick-making. The register records the marriage, on December 30, 1816, by licence, of Percy Bysshe Shelley and Mary Wollstonecraft Godwin; and on October 3, 1791, by banns, that of "Henry Cecil, of the Parishe of St. Mildred's, Bread-street, Batchelor, and Sarah Hoggins, of the same Parishe, Spinster." One does not at first recognise, in this entry, the actual substance of a favourite legend. "He is but a landscape-painter, and a village maiden she," sang the late Laureate; yet there seems to be no doubt that the entry relates to the second (but first legal) marriage to his second wife, of the nephew and heir of the ninth Earl of Exeter, who, on his first wife's elopement, retired to Bolas, co. Salop, where, as "John Jones," he went through the marriage ceremony, on April 13, 1790, with Sarah Hoggins of that place. In July, 1791, he obtained an Act dissolving his marriage with Emma Vernon; and succeeded his uncle in December, 1793, having meanwhile returned to Bolas as "John Jones," with his wife Sarah. The entry in St. Mildred's register is witnessed by E. Foulkes, who was the family solicitor, we believe. Thanet-place, just without Temple Bar, is a *cul-de-sac* of old-fashioned houses, which is named after the Tuftons, Earls of Thanet. At the entrance stood the "Rose" tavern, at one time famous for its vine and the painted room mentioned by Walpole, of which the history has been traced to more than 200 years ago.

Landscape Exhibition, Dudley Gallery.

THE Dudley Gallery is the scene of a very interesting little exhibition of the works of a few landscape-painters of special style and aims, including Mr. Hope McLachlan, Mr. R. W. Allan, Mr. James S. Hill, Mr. Peppercorn, and Mr. Leslie Thomson; and also Mr. Waterlow, whom we mention separately because his is a *talent rangé*, and leans not to experiments and eccentricities, and if there is less power in his works than in some of the others in the room, there is a finish of execution and balance of style about them which is not to be found in other works in the room. Nevertheless, some of Mr. McLachlan's paintings of special effects of light and weather are very fine and effective, as "Night on the Loch," "Moonrise," (in which there is a real look of moonlight), and "Storm at Sundown," a fine effect of a fiery windy sky. Mr. Allan's "The Golden Hour" is a little too obviously inspired by Corot, but there is much beauty in it, and it is interesting to see how a painter generally noteworthy for the keen freshness and light in his open-air subjects can touch a quite different key at will. Mr. Hill's "Meadows at Sandwich" is what would be a fine picture spoiled by a too dirty and material sky; "Across the Sand Dunes" we like better. Mr. Waterlow's "Golden Autumn" received a gold medal at Berlin last year; it is a little too delicate and demi-tinted, but a beautiful work nevertheless, perhaps surpassed in real artistic feeling by one or two of the smaller ones, "A Little Farm, Tintagel," especially. Mr. Peppercorn splashes too violently in "The Solent" and "The Pool," but his "Twilight" with its "sallow-rifted glooms" is really fine, as also one or two others of the group. Of Mr. Leslie Thomson's "Wareham" is the best; there is a certain power in one or two of the others, but "Sunset, Poole Harbour" will never do—or rather, it is quite overdone.

Mr. Walter Emden.

WE have had a communication on the part of Mr. Emden, to the effect that we have done him injustice in the "Note" in our issue of December 26, under the heading "Mr. Emden and the London County Council Contracts." We are assured that Mr. Emden did not take the prominent part that is supposed in recommending the artificial stone made by the company of which he was a Director; that he neither received nor expected any commission in the matter; and that his reported observation on resigning his position in the Metallic Stone Company, that he could be of more use to them when free, was merely a general remark implying nothing more than appeared on the face of it. We are glad to be given to understand that this is so; merely observing that Mr. Emden's own action in the matter was so ill-judged that he was himself to blame if unfavourable deductions were drawn from it; and this, we believe, his own friends will admit.

SYNAGOGUE, MAIDA HILL.—In reference to this building, illustrated in our issue of December 26 last year, Messrs. Ewart & Co. ask us to mention that they performed the work of covering the dome with sheet copper.

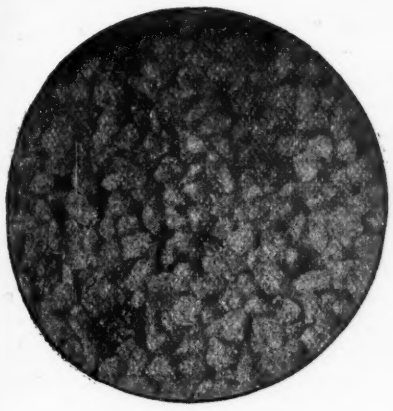


Fig 1.—Kentish Ragstone.

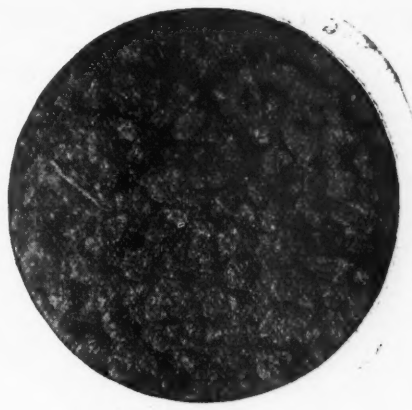


Fig. 2.—Cement Clinker.

Fig. 3.—Cement G as received.

Fig. 4.—Cement G: + 20 per cent. Ragstone.

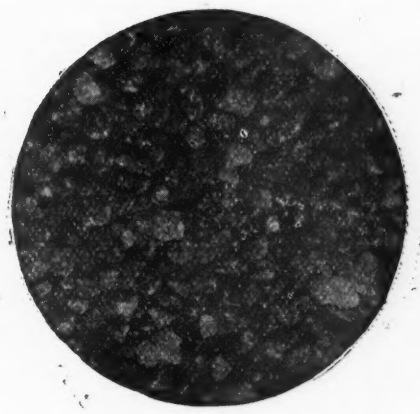


Fig. 5.—Cement containing Rag.

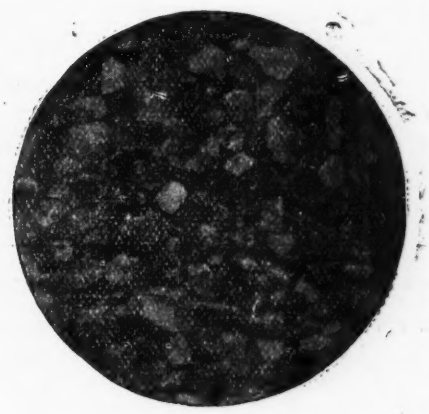


Fig 6.—Cement containing Slag.

THE EFFECT OF ADMIXTURES OF KENTISH RAGSTONE, &c., UPON PORTLAND CEMENT.

THE following is the paper on this important practical subject which was read before the Society of Engineers on November 2 by Mr. D. B. Butler, the present representative of Messrs. Henry Faija & Co. The publication of this valuable paper has been deferred hitherto for want of space to give it entire :—

"At the conclusion of a paper which the author had the honour of reading before the Society last year, the question of cement admixtures was briefly touched upon, and the author intimated that he preferred to reserve his opinion as to the effect of such admixtures until the completion of a series of experiments on the subject which he then had in hand. These experiments now being completed, he has great pleasure in placing the results before the Society, together with the conclusions he has deduced therefrom.

It will be remembered that during the controversy on this matter that was carried on in the technical journals some two years ago, one firm of Portland cement manufacturers in the London district strenuously upheld the admixture of Kentish rag with cement, and maintained that a judicious admixture of that material was not only not an adulterant, but actually improved the cement. Kentish rag is the local name for a sandy limestone of the Lower Greensand formation, which is extensively quarried near Maidstone and elsewhere for building and road-making purposes. It is a more or less impure carbonate of lime, the impurities consisting of sandy argillaceous matter, which vary according to the strata in which the stone is found. The particular ragstone used for these experiments was obtained from a firm of quarry owners near Maidstone in the ordinary course of business, and its chemical analysis was found to be as follows :—

Water	1·00
Insoluble Siliceous Matter ...	7·28
Soluble Silica	2·75
Alumina	3·70
Oxide of Iron	3·34
Carbonate of Lime	80·69
" " Magnesia	·56

For the purposes of these experiments, the stone was carefully picked to avoid as far as possible the sandy matter forming its outer surface, and was ground to the following degree of fineness :—

Residue on a 180 sieve	...	31·0 per cent.	
" " 120 "	...	25·0	"
" " 76 "	...	9·8	"
" " 50 "	...	0·3	"

The first series of experiments undertaken was to add this ground ragstone to an ordinary Portland cement in quantities ranging from 2 to 50 per cent., and to ascertain the effect of the admixture by means of the usual tests for tensile strength, both neat and with three parts of standard sand, at dates ranging from seven days to twelve months. The results of these tests are given in Table I. To facilitate comparison, a column is added to each table giving the net gain or loss per cent. at the completion of each series of tests. Broadly speaking, the admixture does not seem to materially affect the strength of the cement when gauged neat, in some cases showing a slight gain, especially at the earlier dates, but when gauged with three parts of standard sand, the adulterated cement almost invariably gives a lower result than the pure cement.

A further experiment was tried with the same cement gauged with fresh water in the ordinary way and left in air, and also gauged with sea water and placed in sea water at the expiration of twenty-four hours. Fifteen per cent. of ragstone was added in each case, and the results are given in Table II. These results suggest that the prejudicial effect of the admixture is greatly intensified when the cement is left entirely in air, and also when exposed to sea water. As 15 per cent. seemed to be about the quantity of admixture used by the advocates of the ragstone, that proportion was tried with three other cements from different London manufacturers; the tests of two of them were carried to three months only, the third being extended to the end of the twelve months. The results are given in Table III., and confirm the previous experiments, viz., that when tested neat the strength is not materially affected by the admixture; in fact, in the case of cement C, it shows a distinct gain; but when tested as a mortar with three parts of standard sand, its strength is in every case seriously diminished, the diminution ranging from 6 to 14 per cent.

In the course of the discussion before mentioned, one correspondent maintained that the addition of ragstone was of no more value than the admixture of so much fine sand, and the author therefore thought it would be interesting to ascertain what the exact effect of an admixture of fine sand would be. For that purpose, therefore, some standard Leighton Buzzard sand was pulverised to the following degree of fineness :—

Residue of a 120 sieve	...	...	28 per cent.
" " 76 "	...	...	7 "

Fifteen per cent. of this fine sand was mixed with cement A and the mixture tested as before, the results of which are given at the bottom of Table I. Taking the neat test first, it will be seen that the strength of the cement was sensibly diminished by the admixture at the end of a week, while at twenty-eight days, three months, and six months, it was equal, and even superior, to the pure cement; but at twelve months it dropped back to a loss of 8·7 per cent. The three to one sand briquettes, on the other hand, show a marked diminution of strength throughout, especially at the earlier dates.

The experiments hitherto described, formed the first series undertaken by the Author in carrying out his researches on this subject. The chief points which seemed to him worthy of further experiment were the comparative effect of ground sand and ragstone upon cement, and also the effect of the ragstone admixture when the cement was used with sea water and when left entirely in air. The following experiments were therefore instituted with the view of corroborating or otherwise the results obtained in the primary series.

Referring first to the effect of an admixture of finely ground sand compared with that of ragstone, experiments were instituted to ascertain the comparative effect of admixtures of 2, 10, 20, and 30 per cent. of each of these materials, and the results are given in Table IV. Based on the neat tests alone, cement containing as much as thirty per cent. of fine sand is slightly stronger at the end of twelve months than the pure cement; but taking the three to one sand briquettes as the basis of quality, the cementing power of the adulterated material is found to be diminished by the admixture as much as fifteen per cent. The results of these experiments tend to the conclusion that, so far as improvement goes, the admixture of finely ground sand has practically the same effect as an admixture of ragstone, viz., it certainly in some instances increases its strength when gauged neat, but when used as a mortar, with three to

TABLE I.

THE EFFECT OF THE ADMIXTURE OF VARIOUS PERCENTAGES OF KENTISH RAGSTONE UPON THE TENSILE STRENGTH OF PORTLAND CEMENT.

Cement No.	Nature and Proportion of Admixture.	Gauged with	Placed in	Tensile Strength in Lbs. per Square Inch.													
				Neat Cement.					Effect of the Admixture at end of 12 months.		Three parts Sand to one part Cement.					Effect of the Admixture at end of 12 months.	
				7 days.	28 days.	3 mths.	6 mths.	12 mths.			7 days.	28 days.	3 mths.	6 mths.	12 mths.		
A	Pure Cement	Fresh Water		406	573	596	658	745	Loss %	Gain %	160	257	283	383	410	Loss %	Gain %
A	2 per cent. Kentish Ragstone	,,		402	573	601	707	720	3·35	—	137	280	302	350	385	6·09	—
A	5 ,, ,, ,,	,,		432	595	570	668	742	0·42	—	117	252	274	382	365	10·9	—
A	10 ,, ,, ,,	,,		423	522	577	692	700	6·04	—	108	258	289	360	357	12·9	—
A	15 ,, ,, ,,	,,		463	497	592	677	752	—	0·94	93	242	268	340	393	4·0	—
A	20 ,, ,, ,,	,,		380	552	592	655	742	0·42	—	95	230	250	332	357	12·9	—
A	50 ,, ,, ,,	,,		190	350	449	513	592	20·5	—	43	127	167	282	333	18·8	—
A	15 per cent. Fine Sand ...	,,		366	548	581	723	680	8·7	—	88	197	272	337	330	19·5	—

TABLE II.

THE EFFECT OF AN ADMIXTURE OF KENTISH RAGSTONE UPON PORTLAND CEMENT WHEN LEFT IN AIR AND WHEN PLACED IN SEA WATER.

Cement No.	Nature and Proportion of Admixture.	Gauged with	Placed in	Tensile Strength in Lbs. per Square Inch.													
				Neat Cement.					Effect of the Admixture at end of 12 months.		Three parts Sand to One part Cement.					Effect of the Admixture at end of 12 months.	
				7 days.	28 days	3 mths.	6 mths	12 mths.			7 days.	28 days	3 mths.	6 mths.	12 mths.		
A	Pure Cement	Fresh Water.	Air.	410	747	692	827	855	Loss %	Gain %	145	227	223	300	351	Loss %	Gain %
A	15 p.c. Kentish Ragstone	,,	,,	417	710	726	672	747	12·6	—	118	83	212	183	180	48·7	—
A	Pure Cement	Sea Water.	Sea Water.	458	600	611	782	810	—	—	87	170	242	313	330	—	—
A	15 p.c. Kentish Ragstone	,,	,,	328	482	621	795	815	—	0·61	28	100	225	247	272	17·6	—

TABLE III.

THE EFFECT OF AN ADMIXTURE OF 15 PER CENT. OF KENTISH RAGSTONE UPON THE TENSILE STRENGTH OF THREE DIFFERENT PORTLAND CEMENTS.

Cement No.	Nature and Proportion of Admixture.	Gauged with	Placed in	Tensile Strength in Lbs. per Square Inch.													
				Neat Cement.					Effect of the Admixture at end of 12 months.		Three parts Sand to one part Cement.					Effect of the Admixture at end of 12 months.	
				7 days.	28 days.	3 mths.	6 mths.	12 mths.			7 days.	28 days	3 mths.	6 mths.	12 mths.		
B	Pure Cement	Fresh Water.		577	775	—	822	857	Loss %	Gain %	197	337	—	408	428	Loss %	Gain %
B	15 p.c. Kentish Ragstone	,,		515	640	—	825	803	6·3	—	170	273	—	385	400	6·5	—
C	Pure Cement	,,		—	—	556	—	—	at 3 mon	ths only.	—	—	353	—	—	at 3 mon	ths only.
C	15 p.c. Kentish Ragstone	,,		—	—	626	—	—	—	12·6	—	—	304	—	—	13·9	—
D	Pure Cement	,,		—	—	633	—	—	at 3 mon	ths only.	—	—	375	—	—	at 3 mon	ths only.
D	15 p.c. Kentish Ragstone	,,		—	—	632	—	—	·15	—	—	—	346	—	—	7·7	—

one of standard sand, it diminishes its value according to the amount of diluent used.

Coming next to the effect of admixtures of Kentish ragstone upon cement that is used with sea water and upon cement that is left in air, the author tried the comparative effect of such admixtures upon two samples, cement F being manufactured on the Thames near Gravesend and cement G from the lias formations of Warwickshire. Cement F was mixed with 15 per cent. of ragstone, and cement G with 10 and 20 per cent. respectively, and the effects of these admixtures are given in Tables V. and VI. It will be seen that the addition of 15 per cent. of ragstone to cement F weakens it throughout, both when tested neat and with three parts of sand, the weakening effect of the ragstone being specially marked when the cement is left entirely in air, and to an even greater degree when gauged with and placed in sea water.

With cement G (Table VI.) the addition of 10 and 20 per cent. of ragstone does not seem to materially affect its strength when gauged neat, but when gauged with three parts of standard sand, the loss of cementing power is represented by 1·2 per cent. and 8·9 per cent. respectively, at the end of six months. The briquettes left in air indicate the presence of the ragstone in a very marked degree, both neat and with three parts of standard sand, while those gauged and placed in sea water show a much greater diminution in strength than the ordinary fresh water briquettes, though not to such an extent as those left in air.

The author has not thought the effect of the ragstone admixture upon the minor properties of the cement, such as colour, time of setting, specific gravity, &c., of sufficient importance to warrant any special experiments. It is very evident that, as the ground ragstone is much lighter in colour than Portland cement, its addition would tend to lighten the colour of the mixed material according to the proportion used. The same remarks apply to its effect upon the setting properties of the cement, inasmuch as being by itself an inert material, it merely retards the setting in the same way that an addition of sand or other aggregate would do. There is, however, one peculiarity which is worth noting, and that is, when gauged for testing purposes in a Faija mechanical mixer, a cement containing the admixture has a tendency to ball together, or cohere in the machine more readily than pure cement, and this cohesive property may in some degree account for the improved results obtained in certain instances."

For the purposes of reference the chemical composition and fineness of the several cements used in the foregoing experiments are given in Tables VII. and VIII. It should be noted, however, that as the analyses were made some time after the inception of the experiments, the amount of carbonic anhydride and water found is largely due to absorption from the atmosphere.

Taking these experiments as a whole, they clearly show that, although in some instances a certain percentage of ragstone may improve the strength of the cement when gauged neat, it invariably produces an inferior result when tested with three parts of standard sand, especially when left in air or placed in sea water. In other words, although it sometimes increases the cohesive strength of the sample, it invariably diminishes its adhesive power or cementitious value, which is the most essential property of a cement. It is probable that if tested with a larger proportion of sand, say five to one, instead of three to one, the weakening effect of the ragstone would have been still more marked, inasmuch as the inert particles of the admixture would have been spread over a larger area, and their inertness as a cementing material brought more into prominence. The author's object, however, in these experiments was to compare the results of the pure and mixed cements by the standard methods of testing, and only those methods have been adopted throughout. As, therefore, in actual work, cement is never used neat, but always with a certain proportion of aggregate, these experiments show that an admixture of ragstone is merely a diluent, and, as has been shown by the experiment given in Table IV., is practically of the same value as an admixture of finely-ground sand.

Why the admixture of a considerable percentage of inert material, such as Kentish ragstone or finely-ground sand, should in some instances improve the strength of a cement when gauged neat, is a matter which is not altogether easy to explain. In the course of some recent researches on the finer grinding of Portland cement, the author found that by re-grinding a cement having a residue of about 30 per cent. on a 180 sieve, so as to all pass through that sieve, its strength when gauged neat, although slightly higher than the original cement at the seven days, practically showed no increase at the twenty-eight days, three, and six months, while the original cement gradually increased at each date. On the other hand, the three to one sand briquettes of the fine cement showed a great deal higher strain at the seven days than the sand test of the original cement, and continued to increase at the longer dates till, at three and six months, they were considerably stronger than the neat briquettes. This suggests that the extremely fine particles of the cement – by themselves, unless they have some considerable body of hard inert substance to crystallise around, are not so strong as a cement containing coarser particles of clinker, which form, so to speak, a perfect aggregate and nucleus of crystallisation. It may be, therefore, that in some instances a certain percentage of hard inert material gives body or hardness to the neat briquette, and that the presence of small particles of inert material afford more nuclei of crystallisation, and thus enable the briquette to withstand a higher tensile strain. That an admixture of ten or twenty per cent. of inert material should cause the cement to develop a lower strain when tested with three parts of standard sand is only what might have been expected, for it is very evident that if two particles of sand or aggregate have between them a particle

TABLE IV.

THE COMPARATIVE EFFECT OF ADMIXTURES OF KENTISH RAGSTONE AND FINE SAND UPON THE TENSILE STRENGTH OF PORTLAND CEMENT.

Cement No.	Nature and Proportion of Admixture.	Gauged with	Placed in	Tensile Strength in Lbs. per Square Inch.											
				Neat Cement.				Effect of the Admixture at end of 12 months.		Three parts Sand to 1 part Cement.				Effect of the Admixture at end of 12 months.	
				7 days.	28 days.	6 mths.	12 mths.			7 days.	28 days.	6 mths.	12 mths.		
E	Pure Cement	Fresh Water.		498	587	645	651	Loss %	Gain %	247	289	446	489	Loss %	Gain %
E	2 per cent. Kentish Ragstone	,,		475	498	586	675	—	3·6	232	292	421	468	4·3	—
E	2 per cent. fine Sand	,,		470	546	648	642	1·3	—	220	299	401	461	5·7	—
E	10 per cent. Kentish Ragstone	,,		438	471	648	682	—	4·7	197	301	389	478	2·2	—
E	10 per cent. fine Sand	,,		483	552	656	665	—	2·1	203	287	429	449	8·2	—
E	20 per cent. Kentish Ragstone	,,		423	479	672	646	0·76	—	173	225	394	453	7·3	—
E	20 per cent. fine Sand	,,		405	470	737	690	—	6·0	170	260	389	441	9·8	—
E	30 per cent. fine Sand	,,		355	507	687	655	—	0·61	143	228	376	412	15·7	—

TABLE V.

THE EFFECT OF AN ADMIXTURE OF KENTISH RAGSTONE UPON PORTLAND CEMENT WHEN LEFT IN AIR, AND WHEN PLACED IN SEA WATER.

Cement No.	Nature and Proportion of Admixture.	Gauged with	Placed in	Tensile Strength in Lbs. per Square Inch.											
				Neat Cement.				Effect of the admixture at end of 6 months.		Three parts Sand to 1 part Cement.				Effect of the admixture at end of 6 months.	
				7 days.	28 days.	3 mths.	6 mths.			7 days.	28 days.	3 mths.	6 mths.		
F	Pure Cement	Fresh Water.	Fresh Water.	323	544	628	697	Loss %	Gain %	135	218	318	378	Loss %	Gain %
F	15 p.c. Kentish Ragstone	,,	,,	303	457	579	676	3·0	—	130	198	297	357	5·5	—
F	Pure Cement	,,	Air.	422	572	760	670	—	—	198	217	282	296	—	—
F	15 p.c. Kentish Ragstone	,,	,,	405	601	683	614	8·3	—	167	157	213	258	12·8	—
F	Pure Cement	Sea Water.	Sea Water.	382	540	682	802	—	—	102	163	265	312	—	—
F	15 p.c. Kentish Ragstone	,,	,,	305	513	642	721	10·1	—	72	124	226	252	19·2	—

TABLE VI.

THE EFFECT OF ADMIXTURES OF KENTISH RAGSTONE UPON PORTLAND CEMENT WHEN LEFT IN AIR AND WHEN PLACED IN SEA WATER.

Cement No.	Nature and Proportion of Admixture.	Gauged with	Placed in	Tensile Strength in Lbs. per Square Inch.											
				Neat Cement.				Effect of the Admixture at end of 6 months.		Three parts Sand to 1 part Cement.				Effect of the Admixture at end of 6 months.	
				7 days.	28 days.	3 mths.	6 mths.			7 days.	28 days.	3 mths.	6 mths.		
G	Pure Cement	Fresh Water.	Fresh Water.	497	570	672	692	Loss %	Gain %	183	248	358	402	Loss %	Gain %
G	10 p.c. Kentish Ragstone	,,	,,	540	614	683	681	1.6	—	188	253	355	397	1·2	—
G	20 p.c. Kentish Ragstone	,,	,,	507	674	707	702	—	1·4	145	219	307	366	8·9	—
G	Pure Cement	,,	Air.	440	680	814	845	—	—	233	273	404	421	—	—
G	10 p.c. Kentish Ragstone	,,	,,	452	749	763	652	22.8	—	208	252	314	353	16·1	—
G	20 p.c. Kentish Ragstone	,,	,,	430	662	766	735	13.0	—	210	249	297	291	30·8	—
G	Pure Cement	Sea Water.	Sea Water.	—	694	773	832	—	—	—	239	307	321	—	—
G	10 p.c. Kentish Ragstone	,,	,,	—	605	737	787	5.4	—	—	232	285	298	7·1	—
G	20 p.c. Kentish Ragstone	,,	,,	—	667	779	830	.24	—	—	176	220	273	14·9	—

of an inert substance, such as Kentish rag, instead of an active cementitious particle of cement, the weakening of the mass must result. The author is, therefore, of opinion that any admixture which by itself is inert, unless it is readily soluble in water, or reduced to an absolutely impalpable powder, so that it can be acted upon by every particle of the cement, must diminish the cementitious value of the cement, and therefore prove a source of weakness to the structure.

Having conclusively demonstrated that, so far as the cementitious value of the cement is concerned, these admixtures are simply diluents, or adulterants, the author next proposes to discuss some of the methods by which their presence may be most readily determined. The most certain method of detection is, of course, by chemical analysis; but a chemical examination of a fairly simple nature will determine the presence of Kentish rag. As already stated, Kentish rag is a more or less impure carbonate of lime, and, as such, effervesces freely upon the addition of hydrochloric acid. If, therefore, a sample effervesces to any considerable extent when treated with a weak solution of this acid, there is reason to suspect the presence of ragstone, and a further examination should be made to corroborate, or otherwise, [these indications. In applying this test, however, it must not be forgotten that all well-matured cements effervesce more or less when treated with this acid, owing to their having absorbed a certain amount of carbonic acid from the atmosphere, and care must be taken that this slight effervescence is not confounded with that due to the presence of ragstone. If any appreciable quantity of ragstone is present, the effervescence is more prolonged, and the larger particles of the limestone float about in the liquid giving off gas. If the dilute acid is placed in a glass or other suitable dish and the cement dropped into it, a few grains at a time, from the point of a pocket knife, a very little experience enables the operator to discriminate between the effervescence caused by the presence of ragstone and that which is merely due to a well-matured cement. Of course, if a complete chemical analysis is made of the sample, there are other indications in addition to the evolution of carbonic acid gas which enable the presence of ragstone to be finally and conclusively determined upon.

Another admixture which is more particularly used in the North of England is blast furnace slag, and, although the author has not experimented specifically with this substance, he is of opinion that, having of itself no cementitious value, its effect, when added to cement, is practically the same as that of ragstone. The presence of slag is also fairly easy to detect by chemical means, though to determine it with any certainty requires practically a complete analysis. A peculiar characteristic, however, of many cements containing slag is that, after immersion in water about a week, a briquette or pat freshly fractured has a peculiar dark-green appearance, which fades to the normal grey after exposure to the air for a few hours.

Taken in conjunction with a chemical and mechanical examination, the author has found the microscope an invaluable ally in determining the presence of foreign added materials in cements. For the purposes of a microscopic examination, he has found it most convenient to examine the coarser particles of the powder, viz., those particles which pass through a sieve having 76 holes per lineal inch, and are retained on a sieve having 120 holes. A piece of well-burned cement clinker, reduced to particles of this size, and examined under the microscope with a low power (say a one inch objective), has a dark, almost black appearance, somewhat resembling coke, and is of the well-known porous honeycombed nature characteristic of cement clinker. Kentish rag on the other hand, reduced to particles of the same size, is almost white in appearance, and is considerably less opaque. Slag, similarly treated, is also considerably lighter in colour than the cement clinker, and, moreover, appears to split up into angular, almost flaky, fragments in grinding.

It will therefore be readily understood that, with the aid of a microscope, the presence of Kentish rag, and also of slag, is fairly easily determined if in any appreciable quantity. To illustrate the difference microscopically between these substances, the author has prepared a few micro-photographs of cements with and without such admixtures, shown in figs. 1 to 6 (see p. 33). The powder in each case was prepared as previously described, viz., by sifting through a 76 and retaining on a 120 sieve. Fig. 1 is a micro-photo of the Kentish rag used in these experiments, and fig. 2 of a piece of well-burned clinker from the Rugby district; the difference between them is so marked as to need no comment. Fig. 3 represents cement G (see Table VI.) as received from the manufacturer, and fig. 4 the same cement after 20 per cent. of ragstone had been added; the difference between them is very distinct, the particles of ragstone being readily recognisable from their almost white, semi-transparent appearance, in contra-distinction to the dark-coloured clinker. Fig. 5 is a micro-photo of a cement as received from a firm of manufacturers who use Kentish rag in their ordinary manufacture; the rounded, white, semi-transparent nature of the ragstone renders it easily distinguishahle. Fig. 6 is a sample of cement received by the author for testing in the ordinary course, which was found to contain a large admixture of slag. The one great disadvantage of photography is that it does not reproduce the colour of the object. In this particular instance (fig. 6) the substance under the microscope has very much the appearance o

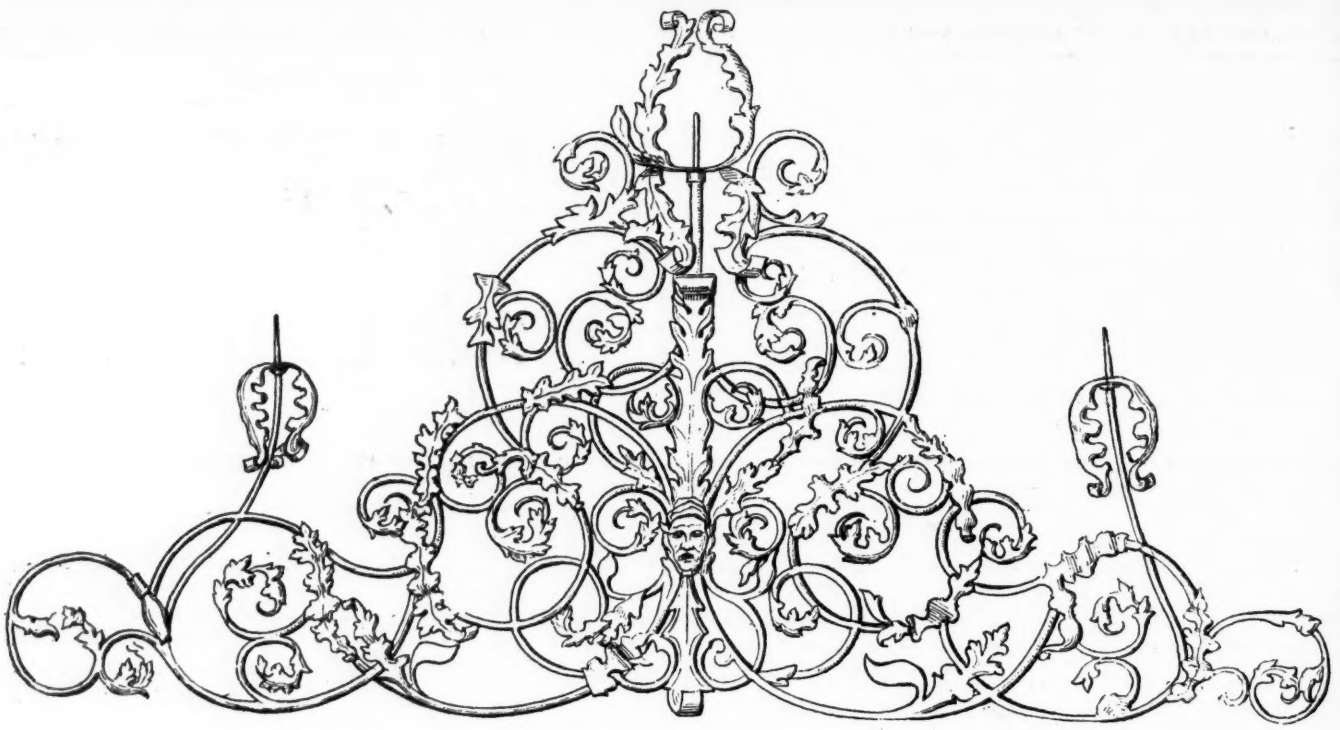


Fig. 1.

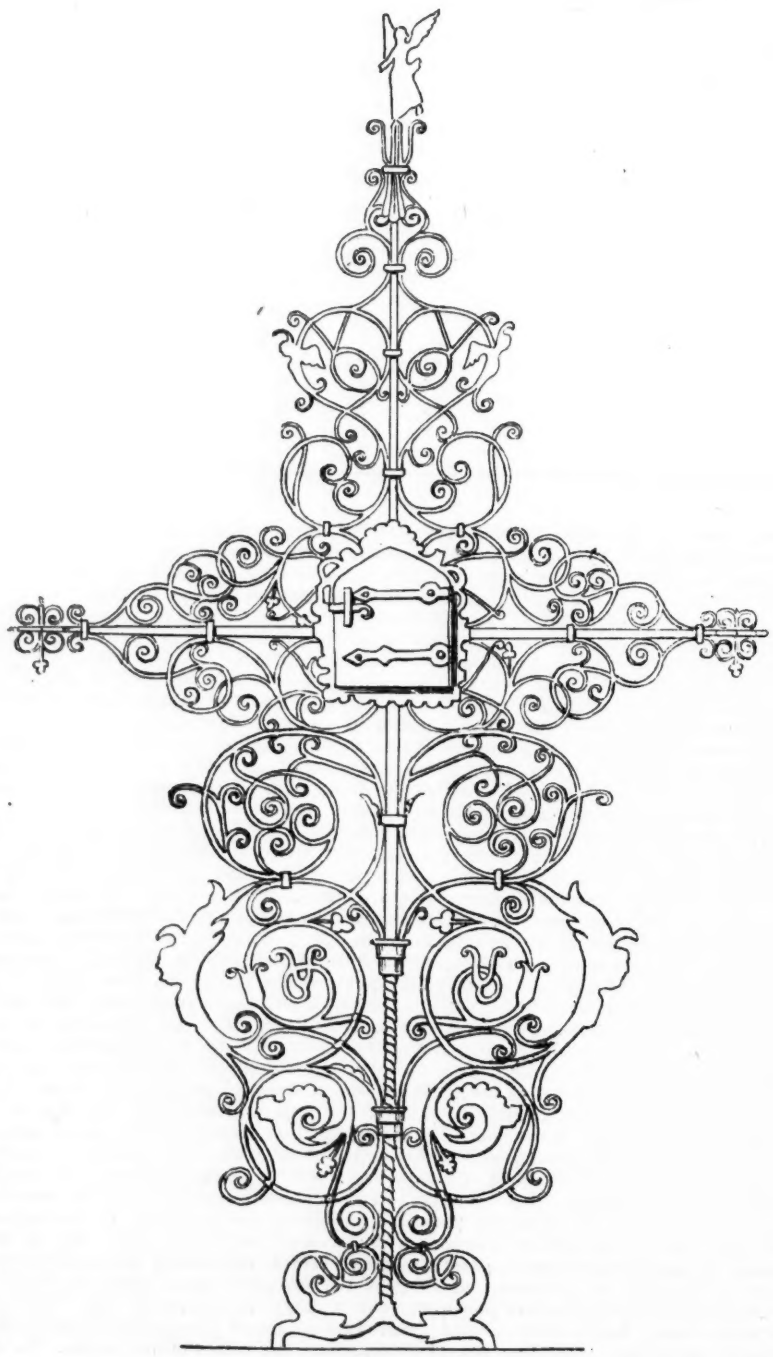


Fig. 2

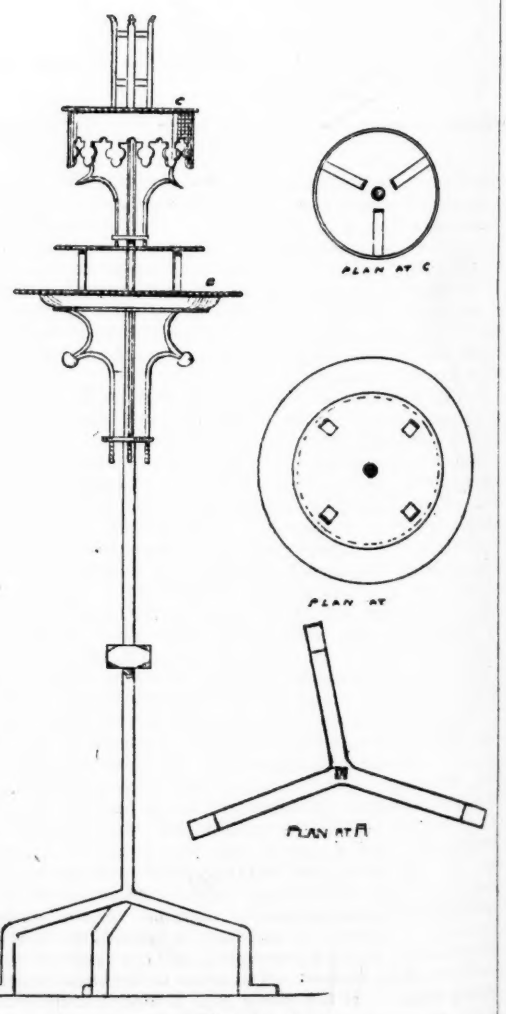


Fig. 4.

mixed sweets, to use a somewhat saccharine simile, which effect is very inadequately reproduced in the photograph. It will be noticed also, that in addition to the difference in colour, another peculiarity of this substance is the sharp, angular, almost jagged fracture of the fragments of slag, as distinguished from the more rounded appearance of the cement clinker.

Fig 2, being a piece of picked clinker, rather represents the microscopic appearance of an ideal cement than of the usually manufactured article, inasmuch as it consists only of thoroughly calcined particles, and contains none of the more or less imperfectly burned portions which are generally found in the ordinary cement of commerce. Fig. 3 conveys a better idea of the appearance of an ordinary cement, the particles of which range from a brownish coloured semi-transparent substance, somewhat resembling gum arabic to the almost black-looking material shown in Fig. 2. The microscope is of value, therefore, not only in detecting the presence of impurities, but also enables some opinion to be formed of the amount of calcination to which the cement has been subjected in the process of manufacture.

In conclusion, the author would add that the cements used in these experiments were in no way specially selected for that purpose, but were either purchased from the manufacturers' wharves through a builder, or had been sent to the author for testing in the ordinary course. Altogether the experiments comprise the results of some two thousand briquettes, in addition to analyses and other tests, and the author trusts they are sufficiently exhaustive and conclusive to clear up a vexed question."

SOME EXAMPLES OF ANCIENT IRON-WORK:

FROM THE MUSEUM OF SCIENCE AND ART, DUBLIN.

THE specimens of ancient ornamental iron-work exhibited in the above Museum, although not numerous, include, however, several works of exceptional interest, both from an artistic and archæological point of view. For instance, there is to be seen a compartment of the railing from Hampton Court Palace, the work of Huntington Shaw, the blacksmith, of Nottingham, an exceedingly fine work of the seventeenth century, but which is probably too well-known to the readers of the *Builder* to require any description; and amongst other works hitherto unnoticed, but well displaying the handiwork of the worker in iron, are the following of which illustrations are given. No. 1 is a very elegant example of artistic iron-work, described as a "Fanlight Grille of iron wrought in scrolls and foliage. A mask in the centre. German sixteenth century. Sent by the Trustees of the Compton Domville Estate, per Captain G. Leslie Poe." This is a very elaborate example consisting of scroll-work springing from a central stem and extending its convolutions to the right and left. The scrolls are moreover enriched at every turn by graceful foliage. The central stem has a mask at about the middle of its height. The iron composing the scroll-work is round in section and ½ in. diameter.

The size of this work is considerable, being 7 ft. 6 in in width. Although described as being of the sixteenth century it is evidently much later, and is probably of the same date as the next example.

No. 2.—A grave cross, described as being of Bavarian work of the seventeenth century. This iron cross is of large size for a memorial of this description, being 7 ft. 4 in. in height and 4 ft. 7 in. in width. The composition exhibits a combination of beautiful curves starting from either side of the central stem of the cross, and twining in varied directions. A small receptacle of rather rude design is placed in the centre of the cross, and opens with a small door turning upon hinges, probably as a place for an inscription, or repository of some memento of the deceased. A very appropriate design surmounts the cross, being an angel holding a trumpet. This is cut from sheet iron. The scroll work is formed of round iron through which the various intersecting pieces are inserted.

The exceeding richness of the whole design is very remarkable, combining elegance with strength and lightness.

No. 3.—Two very curious articles of domestic use, labelled "A gridiron and fork of the Ancient Corporation of the Good Fathers of Alost, Belgium. Flemish c. 1500. From the Ménard Collection, Ghent." From the appearance and state of preservation of the "gridiron," it appears somewhat doubtful as to whether it could have been used as a gridiron in the manner in which it is employed at the present day, but that it was employed for cooking or heating food over a fire the two claws underneath evidently denote. As will be seen from the illustration, it is composed entirely of open-work, octagonal in form, and surrounded by fleurs-de-lys, which project from its sides. The handle is also formed of open scroll-work, and terminating with a fleur-de-lys.

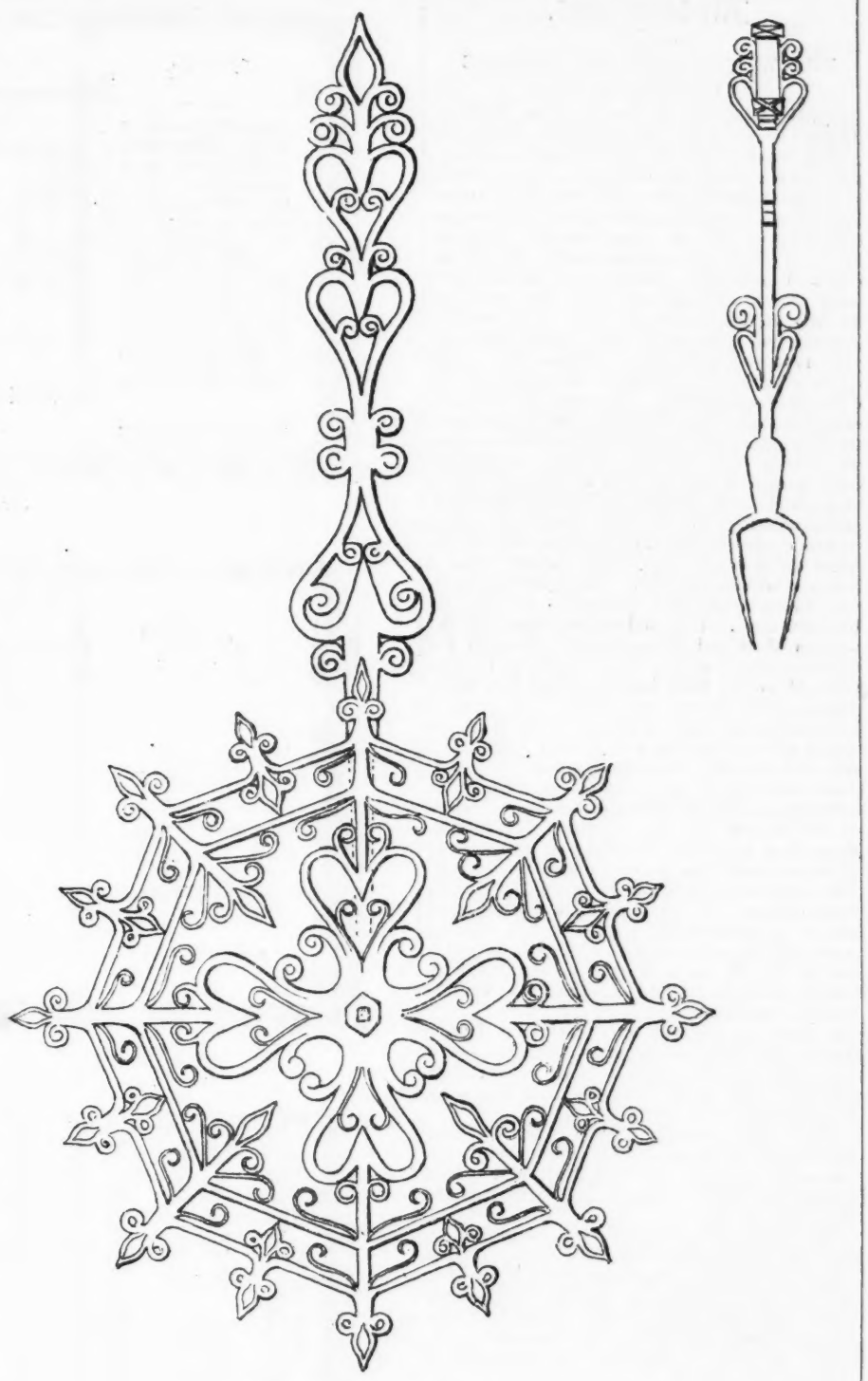


Fig. 3.

The fork corresponds in design with the gridiron. The total length of the gridiron is 2 ft. 10 in., that of the fork, 1 ft. 6 in.

The whole form a very interesting example of the domestic work at the commencement of the sixteenth century.

No. 4.—This large iron candlestick is described as a "Candelabrum with revolving pan of brass, and socket for a large candle. French, fifteenth century. Portion of the Peyre collection." As will be seen from the illustration, it stands upon three feet, and the stem as high as the cusps supporting the brass pan is of ¾-square iron; thence it becomes round and decreases in diameter. The details accompanying the illustration will, it is hoped, explain the construction of the upper portion which revolves round the central stem. With regard to the use to which this large candlestick was applied, it is difficult, in the absence of any information with regard to its original *locale*, whether religious or civil, to form a conjecture. Should it have been the former, it might be suggested that it was for holding the Paschal candle; but its unecclesiastical form seems to militate against the suggestion. Altogether, it is a very curious and puzzling piece of work, and of much interest. The height is 5 ft. 11 in., and the diameter of the lower bowl or pan is 1 ft. 4½ in. D. A. W.

BUILDING TRADE, LEIGH, LANCASHIRE.—Despite interruptions through bad weather the building trade in the Leigh district has during the past half-year been in a flourishing condition. The Leigh, Atherton, and Tyldesley operative bricklayers and their labourers have given notice of their intention to apply for an increase in wages of one halfpenny per hour. The bricklayers at present receive ninepence, and their labourers sixpence. The strike of the moulders at Butt's foundry still continues.

Illustrations.

THE WESTERN CHOIR, BAMBERG CATHEDRAL.

THE Cathedral of Bamberg, on the Main, is one of the most valuable examples of twelfth and thirteenth century architecture to be found in Germany. It is finely situated on the top of a hill, completely overlooking the town, and, like many early German churches, it has an apse flanked by lofty towers at either end. Internally, the church has choirs at both ends, which are supported upon large crypts, all above ground. The whole of the eastern choir and its crypt are fine rich Romanesque work, and were erected after the year 1110, when the first cathedral was burnt down. This eastern choir is shown in the distance in my drawing. The nave of the church occupies three large quadripartite bays between the two choirs, and to an Englishman the arrangement of the interior is very puzzling, because not only is there a stalled choir at either end, but there are also two high altars and two subsidiary altars, with flights of stairs on either side leading to the choirs above. The western choir is the finest example of pure "first pointed" work I have met with in Germany. It is bisected by transepts in the same style. Its crypt is a singularly beautiful work. I am inclined to think that the western choir and high altar were formerly the more important of the two, because, in the first place, the choir itself is deeper than that at the western end. In the second place, it is bisected by the transept; and, in the third place, in the centre of it is the tomb of Pope Clement II., who died in 1048. It is evident that his monument must have been placed here after the rebuilding of the cathedral, and as he was raised to the Papacy from the episcopal See of Bamberg, it is extremely probable that this western choir was erected as a kind of memorial to him. The tomb has been much mutilated, but is still very curious. It consists of a sarcophagus, which is undoubtedly a genuine old classical work, and probably came from Rome; around it are the marble bases of eight slender columns, which probably carried a thirteenth century canopy, which no longer exists. The ends of the tomb are adorned with mermaids having double tails, which would seem to suggest that it was originally the sarcophagus of some Roman admiral. This tomb is shown in the immediate foreground of my drawing.

The stalls are remarkably fine, evidently dating from the close of the thirteenth century or the commencement of the fourteenth. Few examples of early wood carving are so rich and elegant in detail.

The stalls of the eastern choir are later in date, and somewhat resemble those of King's College Chapel, Aberdeen; the stone screens at the back of them are thirteenth century work, and on their outer sides are adorned with the noblest thirteenth century sculpture in Germany. The whole cathedral, in fact, is remarkable for its sculpture and carving.

Attached to the pier between the nave and eastern choir on the north side is a grand equestrian statue, nearly life size, forming a monument of St. Stephen, King of Hungary, and dating from the thirteenth century. In the centre of the nave is the beautiful marble monument by Tilman Rhiemenschneider, erected in the year 1513 to the Emperor St. Henry II. and his wife St. Cunigunda. The effigies of the Emperor and Empress are remarkable for their grace and dignity, and the subjects filling in the Gothic panels round the tomb are remarkable for their delicacy. The whole is executed in white marble. Attached to the walls and piers are several upright effigies of bishops. Three of these are said to be the work of Peter Vischer. An altar in the south transept has over it a twelfth century crucifix of ivory, a most remarkable work; and opening out from the same transept is a long building divided into a nave and aisles, called "The Chapel of the Holy Nail."

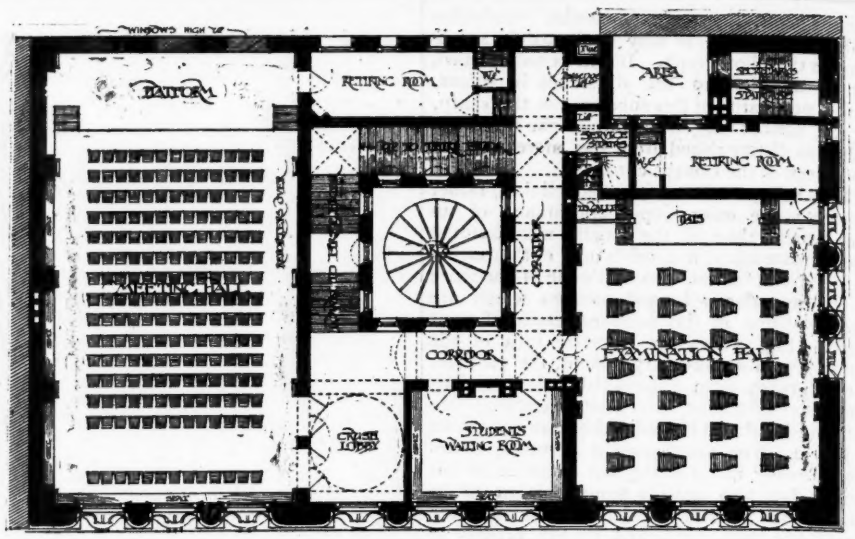
The walls are completely covered by monumental bas-reliefs, cast in bronze, dating from the fifteenth to the seventeenth century, and the principal altar has a beautifully carved wooden reredos enclosing pictures by Wohlgemuth.

It is said that this cathedral contains one hundred and thirty ancient monuments, all of them interesting works of art. During the restoration of the church some fifty years ago, all the modern monuments were removed to the church of St. Michael, where they can still be seen. None of them, however, are of special value, and by their removal and that of the whitewash, wall paintings of remarkable interest have been exposed; and I think that these were also monumental, as several of them are full-length figures of bishops.

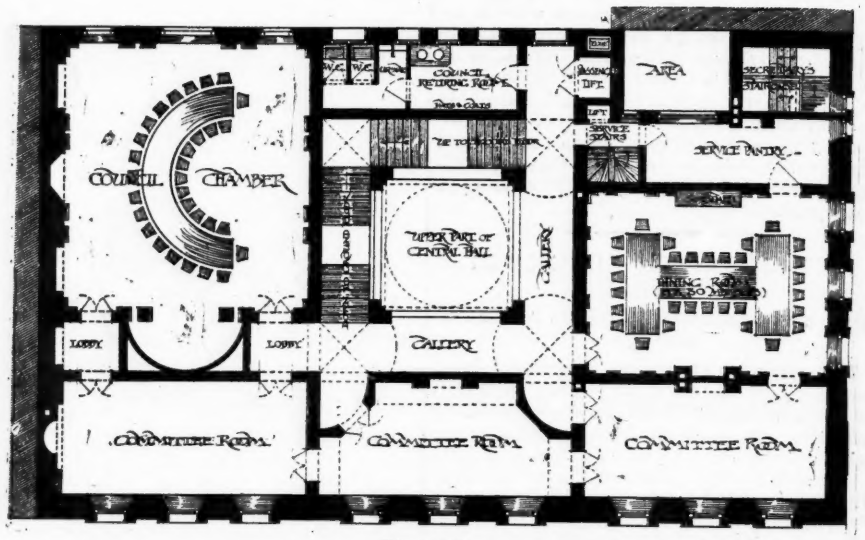
The sacristy and treasury of this cathedral are full of objects of interest, some of the reliquaries and curiosities having been given to the Church by the Emperor St. Henry II. and St. Cunigunda; those, however, which date from the fifteenth century are finer as works of art, though not so curious.

Bamberg is an interesting place full of curious old churches. The immediate district is one of the most fertile of all Europe, the scenery charming and rich in well-preserved old castles, some of which are still inhabited and contain remarkable examples of ancient furniture, tapestry, plate, &c. In fact, few more pleasant localities are to be found in Europe than this Franconian Bavaria.

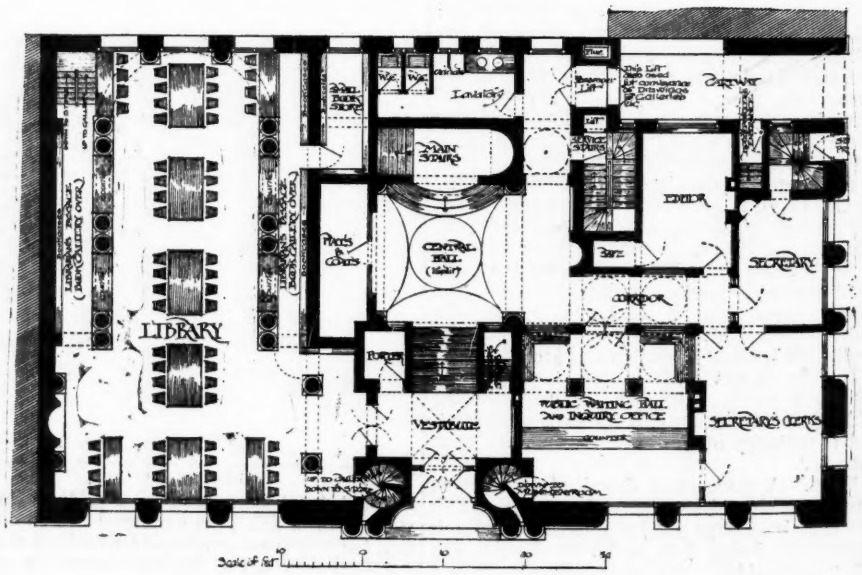
H. W. BREWER.



Second Floor.



First Floor.

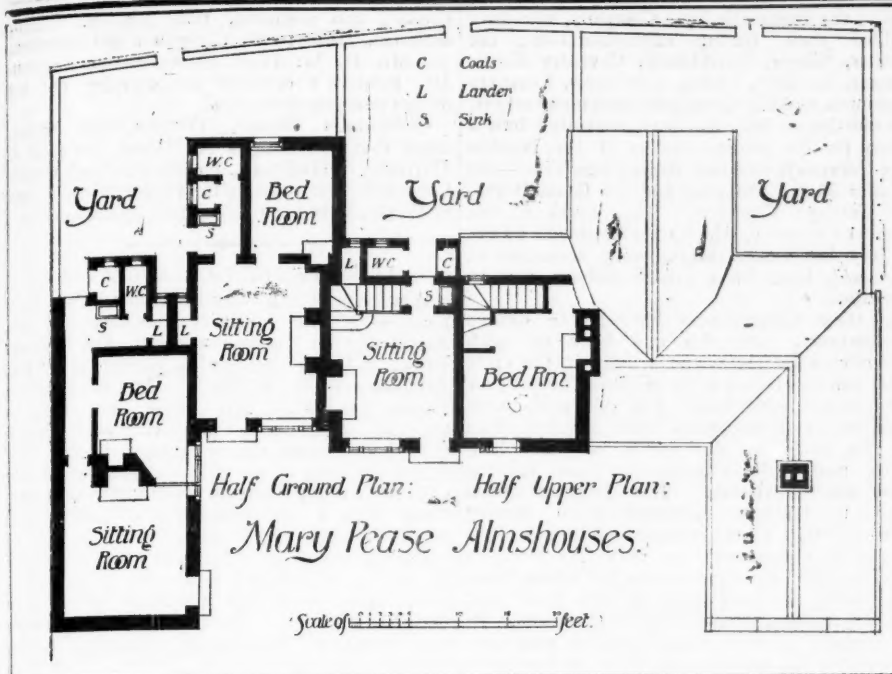


Ground Floor.

Design for an Institute of Architects. Plans.

DESIGN FOR AN INSTITUTE OF ARCHITECTS.

THIS design was prepared in competition for the Soane Medallion, and was exhibited at the Royal Academy last year. The exterior was intended to be of Portland stone, with the exception of the ground story, which was to be of unpolished granite. The frieze of sculpture is illustrative of the arts and crafts allied to architecture, and the shields under the second-floor windows have medallions commemorating famous



architects. A dignified effect in the entrance and central hall was aimed at, the latter being lantern-lit above the level of the first floor, the walls lined with marble, and the vaults frescoed. The masking of the main staircase seemed to convey an air of mystery, and add interest to the interior. The basement contains storage and strong rooms, and a porter's residence. Bedrooms are contrived in the roof, over secretary's residence, and mezzanine floors are arranged over all the smaller rooms. The accompanying plans show the more important floors. PERCY E. NEWTON.

LONDON AND PROVINCIAL BANK, ENFIELD.

THE design for this building, by Mr. W. Gilbee Scott, was selected in a limited competition.

The whole of the ground floor stage of the bank is in stone, and all cornices, window dressings, and other architectural features above this would be in stone also, the remainder being faced with red bricks, and the roofs covered with green slates.

It is proposed to construct the entrance doors, the internal lobby, the counter, cashiers' desks, the panelled dado, and all other fittings in teak. The floor is fireproof throughout. The space for the public would be laid with marble mosaic, and that in the banking space, and in the waiting-room and manager's-room, with pitch pine-wood block flooring. The ceiling of the bank is also fireproof.

The strong-room has a thick fireproof floor and ceiling, and is completely isolated from all external walls.

The manager's house is arranged so that he will be able to get to his room in the bank direct from his house without passing through the bank, by means of a short corridor which is quite shut off from the rest of the house.

The bank being 16 ft. high, it was thought waste of space and money to give the same height to the strong room, lavatories, private entrance, &c., which are situated behind the bank. These portions, therefore, are only 9 ft. high, which gives a floor at a mezzanine level, which has been utilised for the kitchen and its offices.

With the view of utilising the remainder of the bank site, it was considered that a block of offices would be the best and most remunerative building to erect. Twenty offices are provided, with lavatory and water-closet accommodation on every floor; and doorways would be formed and then bricked up, so that at any time they could be opened without structural alteration, should any tenant require two or more rooms communicating. The external architecture of the offices is of the same character as that of the bank, but more simple, that it may not detract from the importance of the principal building.

The drawing was exhibited at the Royal Academy last year.

THE MARY PEASE ALMSHOUSES, DARLINGTON.

THESE almshouses were originally founded by the benefactress, whose name they bear, in 1820, and were situated in the heart of the town. The present re-erection and enlargement of the establishment is due to the generosity of Miss Emma Gurney Pease. Not only is provision made for six inmates (women), instead of four, but being removed to a less crowded position near the outside of the town, the site is more open and attractive. It will be seen from the plan that each inmate is provided with a fair-sized sitting-room, a bedroom, larder, sink, coal-cellar, &c. Most of the accommodation is on the ground-floor level, but the bedrooms in the case of the two central houses are placed upstairs. The building is of local brick, the external walls being 14 in. thick, with a cavity of 4½ in. Commondale moulded bricks are used for the gable copings and chimney dressings.

Miss Pease unfortunately died just as the contract was about to be signed (though she had directed and approved all the arrangements of the plan), and the task of seeing the undertaking completed was taken up by her brother, Sir Joseph Pease.

The late Mr. Robert Kitching, of Darlington, was the principal contractor, and the architect, Mr. Paul Waterhouse (of A. Waterhouse & Son) was assisted in the superintendence by Mr. J. P. Pritchett, of Darlington.

The total cost of the work was 1,498*l.*, including fencing, turf, and brick paths.

The drawing was exhibited at the Royal Academy last year.

ADDITIONS TO WYE COLLEGE.

THIS is a drawing which was exhibited at the last Royal Academy, by Mr. Paul B. Chambers, but in regard to which we have no further information from the architect. In the absence of a plan, the building has at least the merit of expressing pretty well, externally, its general arrangement.

MAGAZINES AND REVIEWS.*

The *Art Journal* contains an article by Mr. Cosmo Monkhouse on "A Northern Home," illustrating the interiors in an exceedingly sumptuous mansion somewhere in Scotland (we are not told precisely where), which are very rich and effective, though perhaps rather too showy and wanting in repose. Mr. F. Miller contributes an article on "Bookbinding," with some illustrations of admirable work by some contemporary bookbinders. We quite concur in the principle that few tools, and the design a simple development of the characteristic marking of each tool, is the right path in designing book-cover decoration. We are also glad to read of the method employed by Messrs. Dent for some less expensive bindings, in which "the binder who tools them works out his own ideas in each cover, so that no two are quite alike;" the general design being given we presume. This seems a most sensible procedure where entirely original and special work cannot be afforded. The Rev. J. Cavis-Brown gives a popular article on "Chichester," and one of the illustrations in the number is a reproduction from a study by M. Dagnan-Bouveret for the head of the Christ in his "Last Supper."

We are glad to see the small monthly publication which used to appear under the title of *A. A. Notes* appearing this year in an enlarged form, and with the title in the more dignified form, *Architectural Association Notes*. There are two interesting sheets of illustrations from the work of the Class of Design, "A Porch" and "A Convalescent home." The latter is very suitably treated in a quiet style, but the members of the Class of Design should we think, be required in such a case to add a north point to their plans and to show that these are laid out with due regard to aspect. We may also point out that the kitchen fireplace is badly placed in regard to the window, so that the cook would be in her own light; an oversight common enough in plans by older architects than the members of the Class of Design.

The *Antiquary* has an interesting paper on the five-storied cliff houses of Pompeii, of which one does not hear very much, though the street houses seem as familiar to us as our own. In the course of the article one is glad to read of one very sensible piece of preservation of old ornament on the part of the Administration of Pompeii. On the ceiling of an old bath room were patches of fresco and relieved stucco ornament, which threatened to fall off. The pieces were carefully detached, and the whole put together into a wooden frame, into which they were cemented. The frame was then raised and placed in the portion in which the fragments were found, and fixed by iron supports. In referring to the Peterborough controversy the *Antiquary* naturally takes the side of the Society of Antiquaries, but in advocating that the advice of an engineer should be called in our contemporary would find that engineering advice, in comparison with that of architects, would be (from the antiquarian point of view) out of the frying-pan into the fire. People fancy an engineer would advise how to keep the structure up without interfering with it; whereas the engineer would only say, "it is not worth while to make the attempt." We should like to hear a colloquy between an eminent engineer and the representatives of the Society of Antiquaries and the Society for the Protection of Ancient Buildings; it would afford amusement at all events, if no other result.

In the *Contemporary* is to be found Mr. Holman Hunt's paper on "Religion and Art," read at the last Church Congress, which should be read by all who are interested in seeing church art raised to a real art instead of being a mediævalised form of decoration carried on as a business. "Throughout my life," says Mr. Hunt, "I have looked upon the artificiality of religious design with despair. It was impossible to cure the evil, for some artists acquiesced in the practice it had given rise to. What gives new hope for the generation to come is that ecclesiastics have arisen with a new sense of the value of living art, and a small number of young artists have thought it high time to combine to denounce the prevalent taste, and to strive to serve religious thought with designs of original conception." Professor Sayce's article in the same magazine, on "Recent Discoveries in Babylon" sums up the results of the latest excavations, unfortunately not by Englishmen, but by Frenchmen (under M. de Sarzec) and Americans. The suggestion made a year or two ago in Mr. Statham's "Architecture for General Readers" (page 21) that the discoveries of M. de Sarzec seemed to leave room for the question "whether architectural influence may not have travelled in the first instance from Assyria to Egypt instead of the reverse way," appears likely to be more than fulfilled, according to Professor Sayce's reading of the results of these recent discoveries.

Harper gives a summary of the state of "Science at the beginning of the Century," with portraits of Humphry Davy, Lagrange, Herschell, and others. An article on "Literary Landmarks of Rome" deals mainly with buildings and monuments connected with literary celebrities, and, in connexion with the illustrations, will interest those who wish to make the most of their Rome.

In the *Century* an article on "Public Spirit in Modern Athens" presents an interest of rather exceptional kind, as it serves, both in illustrations and text, to bring the ancient and modern Athens side by side for comparison. One illustration on the modern side, the head of "A Girl from Eleusis," shows at least that the type of perfect Greek beauty is not extinct in modern times. The article is followed by a short poem, by Mr. R. W. Gildery, on "The Parthenon by Moonlight," which however is hardly equal to the occasion.

* The object of these notes is to point out anything in the contents of the current magazines which is of special interest to our readers, with occasional brief criticisms on the views expressed in such articles. When a magazine which has been sent to us is not noticed, it is because that number contains nothing that it is within our province to comment upon.

In *Scribner* the article on "Thackeray's Haunts and Homes," with sketches of various houses in England and abroad in which he lived at different times, ought to be of interest to many English readers. Under the heading "The Field of Art" are some remarks on the causes of the inability to appreciate sculpture and why it is so universal, which will be read with sympathy by sculptors, though they will hardly find therein consolation or any hope of better appreciation. As a frontispiece is a scene from "David Copperfield," No. 1 of a series of "Scenes from the Great Novels," by Mr. L. Ravenhill, which as an example of book illustration is really masterly; the characters are the precise personages of Dickens, without the element of caricature which has generally pervaded "Dickens" illustrations, and for which n truth the novelist gave only too much excuse. We wish Mr. Ravenhill would illustrate Thackeray, who merits illustration more than Dickens, and has had less of it.

The *Revue Générale* contains an interesting critical article on the architecture of Vienna, "Une Promenade dans Vienne," by M. J. G. Freson, which by the way closes with a compliment, not we think undeserved, to English architecture. Speaking of the excessive classicality of Vienna, M. Freson observes that not only is one met by structures unsuited to the climate and locality of Vienna, but that this continual imitation of Renaissance details leaves hardly any distinction between the modern and the old architecture. "Toutefois, cette observation est applicable aux édifices contemporains en général. L'Angleterre seule a guardé une certaine originalité, grâce au mode d'education de ses architectes; heureux effet dû à l'absence d'écoles d'architecture."

Knowledge commences a series of articles on "The Age of Mountains," by Professor Lobley. Mr. E. Walter Maunder makes an interesting suggnstion under the title, "An Old Record of the Corona"—that one of the forms of Assyrian ornament, "a ring with wings," is really a conventional adaptation in ornament of the effect of the corona in solar eclipse.

In the *Essex Review* (quarterly) Mr. F. Chancellor describes and illustrates St. Mary the Virgin, Runwell, in his series of "Essex Churches." There is an illustrated article on some brasses in various Essex churches—Great Bromley, Cold Norton, Shopland, Stebbing, and Wenden Lofts.

The *Pall Mall Magazine* gives an illustrated account of Warwick Castle.

The *Gentleman's Magazine*, in an article on "A Country Town in the Seventeenth Century," gives some interesting details as to the official, social and business life of such a town two hundred years ago, as gathered from old papers and mercantile accounts &c. The number also includes a short article on "Spectroscopic Double Stars" by Mr. J. Ellard Gore.

Under the heading "The Most Wonderful Tunnel in the World" the *English Illustrated* gives some account of the making of the Blackwall Tunnel, which is illustrated by sections, as well as views, in a more practical and workmanlike style than is usual in magazines for general reading—in this country at least.

CYCLING AND THE BUILDING TRADE.

THE present enthusiasm for cycling has had a remarkable effect during the past year on the building trade in connexion with the central home of cycle manufactory, Coventry. Nearly all the hundred or more cycle companies, as a result of the extraordinary volume of trade, thought it necessary to increase their factory accommodation. One important feature of the cycle trade was the introduction of several new undertakings into the city, intended to supply certain parts of the machines hitherto purchased from other towns. These have all had their effect upon the building trade. During the year the Cycle Manufacturers Tube Company erected an entirely new factory at a cost of 21,000*l.*; a new stamping factory was opened late in the season by a local firm, and at the present time large stamping works are being erected. Altogether, last year about forty new factories were built, and about sixty plans passed for additions to others, in the majority of cases quite as large as the original buildings. In 1895 only ten new factories were erected, and in 1894, fifteen; and the buildings erected last year are on a far more extensive scale than before, and their total value cannot be much less than 250,000*l.* Included among them are the new workshops of the New Beeston Cycle Company, which cover eight acres; the Rover Cycle Company (four acres); the Pneumatic Tyre Company, who have doubled their factory accommodation; the Premier, Singer, Sparkbrook, Coventry Cross, Centaur, Roulette, Viking, Conqueror, Coventry Machinists, and Elk Companies, and many others. The old Cotton Mill has been converted into a factory for the accommodation of the Beeston Tyre Company, and two entirely new firms—the Daimler Motor Company and the Great Horseless Carriage Company. The works of the Humber Company, which were destroyed by fire in July last (the damage being estimated at 100,000*l.*), have been rebuilt and are now in occupation.

All these circumstances have led to strange developments. As the city filled up with mechanics, attracted by the activity in the cycle trade, builders began to be employed on the new factories and extensions. For this work more bricklayers and carpenters were required than the city could supply, and it was not long before new arrivals exhausted the existing house accommodation. The large contracts given to builders prevented them turning their attention to the erection of houses. As early as May there was not an empty house in the city, and hundreds of men, for whom there was plenty of employment in the cycle and building trades, had to seek work elsewhere. In the summer months many houseless men took their rest in the neighbouring fields, and one contractor, Mr. C. Gray Hill, was obliged to so far recognise the situation as to put up a tent for many of his workpeople who would otherwise have been shelterless. For a long time houses continued to be built very slowly, considering the exceptional opening for remunerative investment. An idea of the demand for house accommodation may be gathered from the fact that in many instances rent was paid for houses long before they were completed, in order to secure the tenancy. But builders themselves had something to say upon the subject of house building. Many were fully employed on large contracts, but the speculative builders, who confined their attention to dwellings, complained that they received little encouragement. Land had increased in value to almost prohibitive prices, materials had risen, wages were higher, and the building by-laws (according to their view) far too stringent. The increase in the price of bricks—about 20 per cent.—was, of course, partly due to the inadequacy of the local supply. Then, again, more building meant more building trade operatives, for whom there was no accommodation in the city. But with the completion of many of the large contracts, and the relaxing in certain particulars of the building by-laws, more attention has lately been given to the erection of artisans' dwellings. Plans were passed about during the last few months of 1896 for twenty new streets and nearly 600 houses. Apart from these, other estates are being rapidly developed, and it is not improbable that during 1897 the number of new houses will be at least 2,000.

Amongst municipal projects occasioned by the prosperity of the industries of Coventry are a new sewage system at an estimated cost of 156,500*l.*; the extension of the fever hospital and the erection of a smallpox hospital, to cost 6,700*l.* and 3,100*l.* respectively; the beginning of the scheme for new municipal buildings by the passing of plans for a new police station (14,571*l.*); the widening of several central thoroughfares; and the re-organisation of the City Surveyor's department by the proposed appointment of a Borough Engineer.

While it may be safely said that the building trade in Coventry will be active in the present year, it is probable that fewer hands will be employed. At present quite 1,000 bricklayers, and as many carpenters and joiners are in regular work. Nearly all the large contracts will be completed in a few weeks, and a considerable number of workmen who have temporarily lived in Coventry will then probably leave. In ordinary times there are about 600 bricklayers and carpenters and joiners in Coventry, but there is no fear of this level being reached during 1897.

COMPETITIONS.

SKIPTON INFECTIOUS HOSPITAL. — The Skipton Joint Hospital Committee, at their last meeting, had before them the report of Mr. Thos. Worthington, of Manchester, as to the best six designs for an infectious hospital. There had been twenty-seven sets sent in for competition, but Mr. Worthington had brought the number down to six. He had submitted these to a further examination, with the following result:—1st premium, 20*l.*, Mr. G. E. Bolshaw, architect and surveyor, Southport and Crewe; 2nd premium, 10*l.*, Mr. A. Cullen, architect, Motherwell, Glasgow; 3rd premium, 5*l.*, Mr. H. W. Pratt, Chancery-lane, London. Mr. Bolshaw's estimate for carrying out his design amounts to 10,000*l.*

CORONER'S COURT, POPLAR.—We understand that the designs of Messrs. Lansdell & Harrison, of Highbury, for the Public Coroner's Court and Mortuaries for the Poplar District Board of Works, have been placed first by the assessor.

ARCHITECTURAL SOCIETIES.

ARCHITECTURAL ASSOCIATION OF IRELAND.—At the ordinary meeting of this Association on Tuesday evening, Mr. Thomas Drew, R.H.A., delivered a lecture on "The Architecture of Dublin." Mr. R. Caulfield Orpen presided. Mr. Drew said that in the study of architecture as a living art in Dublin they had remarkable advantages in the mere luxury of living in an old, historic, respectable city, with many dignified monuments of a past time, with a picturesqueness of architectural effect—spontaneous, unstudied; the growth of accidental creation, not made, as it was impossible to make it in a brand new town or city. Let them think what the difference would have been had their lot been cast as students in such new towns as Birmingham, Bradford, Leeds, Wolverhampton, even Manchester. Let them even take his native city, Belfast. How much was there in the modern makings of such towns to inspire the architectural student with one spark of genuine enthusiasm for his art of architecture as he went to his work in the morning and returned in the sunset effects of the evening? London had great wealth of noble and illustrative architecture, if the student could find it out—from its unmatched Abbey of Westminster, running through all the gamut of progression of styles of the Middle Ages, up to the grand chord of the Renaissance architecture in St. Paul's Cathedral, than which there were few more satisfying examples in all the world of classic Renaissance architecture. In London the architectural student had the run of all that, if he were appreciative and discriminating, and lived on a bicycle; but he did not run it as a matter of fact. The interests and objects were too widely apart, and overflowed by a teeming modernism and a sordid flood of building of a greater modern city. Edinburgh had native charms to inspire the architect artist with a fire of enthusiasm in his daily life of going to and fro, such as he knew nothing to approach in all the lovely cities of these kingdoms. There was nothing of pictorial, theatrically-imagined architective and aerially enchanted effect to be conceived like the picture of Edinburgh from the valley below its native Prince's-street. Dublin might not afford exhaustive examples of every age and style, but he maintained that it presented such examples as were wanted to illustrate methods of architectural study. The lecturer then spoke of the architects and architecture of the Custom House, the Bank of Ireland, the Four Courts, Trinity College, and of the residences of the Irish nobility and gentry in Dublin a century ago, and amid applause he concluded his interesting and instructive lecture.—Mr. A. E. Murray, R.H.A., in proposing a vote of thanks to Mr. Drew, said his lecture was the result of a genuine study of the history and architecture of the finest buildings in Dublin, and if Mr. Drew enlarged on the subject and published it, it would be full of interest not only to the citizens of Dublin, but to strangers who visited the city. The Chairman announced the next meeting for the 19th inst., when Mr. J. J. O'Callaghan would lecture on "Design." The library of the Association is now open, and the classes on building construction commence this week, and those on design next week.

PRIVATE BILLS, SESSION 1897; AND PROVISIONAL ORDERS (BOARD OF TRADE).

THE number (293) of private measures prepared for the coming session exceeds the total (258) of last year. The increase is mainly in respect of gas, water, and electricity projects. There are sixty-eight railway bills as compared with sixty-three, nineteen tramway bills as compared with fifteen, and fifty-five electricity and electrical lighting orders as compared with thirty-seven. We give an epitome, abstracted from the official "Notices," of the more important enterprises, within our own province, to which we have not already adverted.

MUNICIPAL, BUILDING, SANITARY, AND OTHER LOCAL IMPROVEMENTS.

BILLS.—*City of London:* To dissolve the Commissioners of Sewers (1848), and vest their property,

powers, duties, &c., in the Corporation, to be administered by the Common Council. *H.M's. Commissioners of Works:* To acquire the sites of Nos. 27-8, Southampton-buildings, for an extension of the Patent Office, westwards of the new block in Staple Inn (south side). *London County Council* (general powers): A new street from north side of St. George's Church, Borough, through the churchyard to Long-lane, opposite Tabard-street, giving, in lieu of the churchyard, lands on the east side of the new street, and to lay out the same as a recreation ground; widen Long-lane on the south side, between Great Dover-street and Southall-place, and on the south side for 4 ch. from the church; widen Battersea Park-road on both sides (in parts), and reconstruct the West London Extension Railway bridge, the Battersea Vestry to contribute; widen Holloway-road (in part), St. Mary, Islington, Vestry to contribute; to provide for contributions by the respective District Boards or Vestries in respect of open spaces at Well-street, Sydenham; East-street, Walworth; Nelson-street, Bermondsey; and Fortune-green, Hampstead; and to enable the Council, or any District Board, or Vestry, with their consent, to erect and maintain on a disused burial ground, such buildings as may be necessary for the efficient management of such ground as an open space or recreation ground. To admit the sewage of Acton and part of East Ham into the Metropolitan drainage system, the Acton, and East Ham Urban District Councils to contribute.

By the following Corporations: — *Birkenhead:* Consolidation of the townships, extension of borough limits, and regulation of places for public dancing. *Bolton:* New streets, a boating-lake, 512 yds. by 80 yds., at Deane and Horton, with diversion of the Middle brook; underground sanitary conveniences, and regulations as to nuisances, libraries, &c. *Bournemouth:* To purchase from Mr. J. E. Cooper Dean the Dean Park Horse Shoe, and build thereon municipal offices; widen and improve several streets; acquire lands for public gardens and recreation ground. *Bradford:* For street improvements; extension of the borough, to include Allerton, Heaton, Thornbury, and Tyersal, and improvement of St. James and Rawson-place markets; control and licensing of the ice-cream and fried fish trades; control of places occupied by or for the Salvation Army; regulation of sky-signs, and to deal with trade sewage and effluents. *Bristol:* Extension of boundary to take in Horfield, Stapleton, and St. George parishes, with parts of Westbury, Brislington, Bedminster, Long Ashton, Portbury, and Portishead; wharfs and quays on the Avon and the floating harbour, and an opening bridge across the Avon. *Colne* (*Lancs.*): For a new street, to be called North Valley-road, the owners, lessees or occupiers of the land to bear the cost; to take a site in Albert-road for erecting a public library, buildings for technical instruction and secondary education, and other purposes; to set apart land for games, with provision of gymnastic and other appliances; the regulation of sky-signs, advertisement hoardings, and street advertisements, with various provisions relating to public health. *Glasgow:* Various local measures and improvements. *Huddersfield:* To widen and improve certain thoroughfares; to work their tramways by other than animal power; to prohibit (except as to such as may be required for the tramways) the suspension of electric wires or lines over, across, or along any street, to compel the same to be placed underground, with removal of those now existing; provision for recreation grounds, including the two offered by Mr. J. Nield Sykes and G. W. Shaw. *Kingston-on-Hull:* To extend the borough area, and erect an opening bridge in Sculcoates; provide a crematorium in the Western cemetery; prohibition of sky-signs and projections of any kind over the streets, and to regulate all structures or devices for advertisements. *Leeds:* Improvement of the drainage area of the Washburn Valley, taking 88 a. of Swinsty Moor and 13½ a. of Hoodstorth-lane Common and Thruscross Green; to widen many streets, and take up and re-inter the human remains in Holy Trinity burial-ground at West End. *Leicester:* Extension of gas and water area; to work the tramways by mechanical or electrical power; to build a public hall with an organ, and to pay musical bands; to erect a crematorium in First Horse-close, Gilross; regulations as to caravans, shows, steam and other organs, whistles, hours for driving cattle, &c., also as to lodging-houses, the hanging of articles and flags over the streets, sky-signs, advertisement vehicles, and hoardings, sanitary matters and the like. *Nottingham:* For new streets and the widening of others; to construct a towing-path between Wilford and Trent Bridges, and embank the river. *Pwllheli:* To constitute themselves the Harbour Authority; to buy the Pwllheli Water Company and erect new works; and to enlarge, improve, and fit up the town and market hall. *Salford:* To buy a site for a warehouse for grain or "grain silo"; lay down tramways (4 ft. 8½ in. gauge); to alter and amend existing laws and regulations as to building; and to provide for better regulation of traffic. *Great Yarmouth:* To lay out as a public park or recreation ground Southtown Common, 15½ a., in Gorleston; regulations for the seashore; to provide swimming baths and recreation grounds; to control and restrict the erection and placing of booths, exhibitions, &c., on the marine parade, beach, gardens, sea-shore, and jetty; to provide for the observance of decency and order at the bathing places; to require (with other sanitary measures) that urinals shall be attached to all kinds of refreshment houses and places of public entertainment, and provide public conveniences and lavatories; to supervise lodging-houses; for the removal or prevention of cranes, sign-boards, flagpoles, and other projections into streets, and prevention of street noises.

For a body of Commissioners in Birmingham to pull down the churches of St. Peter, St. Mary, and Christ Church, with schools and vicarage, sell the materials, graveyards, monuments, vaults, &c., church furniture and plate, to form and endow three new ecclesiastical districts, and convert the site of St. Mary's Church and churchyard into a public recreation ground. (See the *Builder* of November 14 last.

By the following Urban District Councils:— *Colwyn Bay and Colwyn:* Provisions as to the promenade, fore-shore and sands, bathing, and bathing-machines; for new recreation grounds, or winter gardens; to contribute towards musical bands, and advertise the local attractions. *Hoylake and West Kirby* (*Cheshire*): To construct two parades, a marine lake, and carry out the Hoyle Lake Improvement Scheme by forming an embankment, with gates and sluices, 433 yds. in length. *Llandudno:* To purchase the undertaking of the Great Orme's Head Marine Drive Company (1873); to control street musicians; prevent street cries, and singing; to prohibit, regulate, and restrict the use of sky-signs, vehicles, and hoardings for advertisements, together with sundry other local improvements. The Commissioners of the Burgh of Borrowstounness, co. Linlithgow, propose to make a new road from the Church Wynd to Starks Brae road, and to sell the harbour and docks to the Caledonian Railway Company. Mr. David Lewes (or a Company in that behalf) promotes a Bill to authorise the erection of new markets, for provisions and merchandise, at the Twyn, and elsewhere, in Caerphilly, for live stock, fodder, &c., in Tonyfelin Meadow, with powers to alter and improve the existing markets.

NAVIGATION, HARBOURS, DOCKS, FERRIES, PIERS, BRIDGES.

BILLS.—By the Corporations of *Birkenhead:* To buy the entire undertakings of the Rock Ferry and New Ferry across the Mersey, and construct a pier at Rock Ferry slip, 261 yards long, east-north-eastwards, and a floating landing-stage. *Caernarvon:* To acquire the ferries to Anglesey, construct a pier, 600 ft., south-eastwards at Barras, and a swing-bridge across the Seiont at the entrance from the quay to the Eagle Tower, Caernarvon Castle, to Abery Ferry House. *Cowes:* The incorporation of Commissioners to manage, maintain, and improve the harbour, sea-roads and anchorage. *King's Lynn:* To incorporate a Conservancy Board for the port and harbour, with dissolution of the present Harbour Mooring Commissioners; to define the limits of the port as being all the area defined by the charter of 2 James I., and regulate pilots' charges and service, and the supply of tug-boats. *Plymouth:* To vest in them the Lary Bridge at Catwater Harbour, improve and widen approaches of the same; to enlarge the borough boundary to include Lary Bridge and part of Plymstock parish,

North London Railway Company: To widen and otherwise improve the access to Poplar Dock for vessels of larger burden, widen the east side of the entrance between Blackwall Basin and Poplar Dock, and remove the lock gates. *North Eastern Railway Company:* New dock works at Kingston-on-Hull and Middlesbrough; a new dock at east of Victoria pier. *Brading Harbour and Railway Company:* To sell all their undertaking to the Isle of Wight Railway Company. *Deal Harbour Company:* For revival and extension of powers under the Act of 1893. *Hastings Harbour Commissioners:* For two sea-walls, 850 ft. and 300 ft., with an opening of 100 ft., and two sea-walls, 140 ft., in lieu of the sea-wall and embankment authorised by their Act of 1890. *Mersey Docks and Harbour Board:* To extend their Wallasey landing-stage from its west end for 250 ft. northwards, a fixed pier and bridge to connect the existing river-wall therewith, and for a pier or jetty from near the Canada basin, 950 ft. long, north-westwards, parallel to and 270 ft. distant from the river-wall, with branch piers thereto. *Mumbles Railway and Pier:* For extension of the limits imposed by their Act of 1889. *Plymouth and Dartmoor Railway Company:* A pier, 100 yds., southwards, in Deadman's Bay. *Tyne Improvement Commissioners:* For extension of time, and various powers, including the construction of the new ferries.

By Various Companies. At Weston-super-Mare—a pier, 700 yds. westwards, from the Café de Paris, with approach roads; a sea-wall, 600 yds. on the west side of the Grand Parade, to take over the Weston-super-Mare Pier and Grand Pier Companies, and to vest these several undertakings of the new Company in the Urban District Council: by a separate Bill the Grand Pier Company seek for an extension of time under their Act of 1893. At Penarth Flats—for sea-walls, a dock, and railways, &c. For two piers at Lock Fyne and the Bay of Oban' with enlargement of the quay and sea-wall, Oban. The *Caledonian Railway Company* propose new dock works at Grangemouth, to construct a dock, 32 a. in area, a sea-wall 900 yds. long, with new railways in Lanark and Dumfries.

PROVISIONAL ORDERS.—*Clacton-on-Sea Pier Company:* To widen, improve, and lengthen by 200 yds. the existing pier. *Hunstanton Pier Company:* To extend the pier 100 yds. seawards, widen it, and erect assembly, concert, and refreshment rooms thereon. *Tenby Urban Sanitary Authority:* A pier, 1,000 ft. north-eastwards, from the public steps at Castle-hill. *Walton on the-Naze:* Extension of the pier by 600 yds. or thereabouts. *Whitley:* A marine promenade pier, of iron or steel, with wooden deck, 1,000 ft. north-eastwards from the "Corkscrew" and a pavilion thereon, having a capacity for 1,200 people. By certain "promoters": A pier or jetty at Clacton-on-Sea, 275 ft. south-eastwards from Wash Gap sea-wall; a pier, 400 yds. northwards from the Concert Hall, Llandudno, and with pavilions, shops, bazaars, baths, aquaria, &c., thereon; and by Mr. Reginald J. Weld, for a solid pier or breakwater, about 611 ft. eastwards, from the existing pier at Ilfracombe.

RAILWAYS.

BILLS.—*City and West End:* An underground electric railway from Cannon-street (Budge-row) to Broadway, Hammersmith, beneath Blackfriars, Ludgate-circus, Fleet-street, Strand, King William-street, Leicester-square, Piccadilly, and so to Hammersmith, with a generating-power station by the riverside, Fulham; to be worked by electricity, on a 4 ft. 8½ in. gauge. [The proposal is for double tunnels, 11 ft. 6 in. interior diameter, in iron segments, laid at an average depth of 60 ft. below the street levels, and having twelve intermediate stations in the length of six miles; the estimate of cost is from three to three and a half millions]. *Metropolitan District:* A railway or subway from Earl's-court to Mansion House Station, of 4 ft. 8½ in. gauge, to be worked by electricity or cable, or steam-power, with generating-power stations at Walham-green, Parson's-green-lane, and Eel Brook-common. [The platforms at Charing-cross and the Mansion House would be 78 ft. and 95 ft. below the street levels, respectively. Sir Benjamin Baker's report gives estimates for the cost, being 1,000,000*l.* for a double line five miles long, and 453,000*l.* for installation, rolling-stock, and incidental charges]. *Piccadilly to Brompton:* An underground railway from Air-street to south end of Exhibition-road, with subways under Piccadilly at Air and Dover streets, to be worked by electric cables or wires, or other motive power; and with a generating-power station at Swan Wharf, Chelsea Creek. *Central London:* To acquire the sites of Nos. 350-2, Oxford-street, at the south end of Marylebone-lane, for a station in lieu of that in Davies-street, as authorised by their Act of 1891. [The latter site is on the Grosvenor Estate, and we understand that the Company feel unable to comply with certain restrictions demanded by the Duke of Westminster's agents.] *Whitechapel to Bow:* A line worked by steam or electricity, from the Metropolitan District at Vallance-road, through Bethnal Green, Mile End, Stratford, and Bromley to the London, Tilbury, and Southend Railway at Campbell-road, Bow. *West Suburban:* A line from Irongate Wharf-road, Praed-street, to the "Grand Junction Arms" public-house, by the bridge over the Grand Junction Canal, in Willesden parish, worked by mechanical power, with generating works at the Willesden terminus. This line will take 5½ r. of Wormwood Scrubs and Old Oak Common. *Watford, Edgware, and London:* From a junction with the Watford and Rickmansworth branch (London and North-Western Railway), through Bushey, Aldenham, Elstree, Little Stanmore to Edgware, and thence two lines to Edgware branch of the Great Northern, and to Mill Hill Station of the Midland. *South Eastern:* To widen Cannon-street terminus, their Charing Cross line in Lambeth and Southwark, and for three more lines on the north side of the viaduct between New Cross and London Bridge; viaduct from line at Tanner-street to South Bermondsey; station at Corbett's-lane, with line thence to New Cross; widen goods line at Bricklayers' Arms, and extend the line thence towards New Cross; widen lines (both sides) at Dartford, Ashford, and Hastings; sell the Pavilion Hotel, Folkestone; and for extension of time limit under their Folkestone Harbour Works Act of 1885. *Great Eastern:* A line from Woodford, through Buckhurst Hill and Chigwell to Ilford; widenings and improvements at Broxbourne, Ware, Ilford, and North Walsham; to abandon their authorised line (1890) in Tottenham parish; to purchase the Mellis and Eye, Watton and Swaffham, Thetford and Watton, and Downham and Stoke Ferry Railways and undertakings; lines from their Southtown station, Gorleston (Yarmouth), through Gorleston, Hopton, Corton, and Gunton, to Lowestoft, and from Knapton, on the authorised Mundesley branch (1888) of the Midland and Great Northern Companies, through Paston, Edingthorpe, Bacton, Ridlington, and Walcott to Happisburgh (5 m.). *Great Western:* A line from Acton to Wycombe, through Twyford, Perrivale, Greenford, Northolt, Ruislip, Ickenham, Harefield, Denham, Gerrard's Cross, Chalfont St. Peter, and Beaconsfield, with a

branch to their Uxbridge and Rickmansworth line (1896), taking 2 a. of Ickenham Green, ½ a. of the Roundabout, Beaconsfield, and 1 a. of Drayton Green. A separate Company promotes an almost identical scheme for continuing the Ealing and South Harrow Railway, 1894 (with branches at Hillingdon to the Uxbridge and Rickmansworth line, and to Denham), to Temple Farm, Chepping Wycombe, and, eastwards, to the Midland and the South-Western at Willesden, taking 3 r. of Long Bottom at Seer Green, and 2 r. of the Roundabout. The Great Western will rebuild and enlarge the bridges at Westbourne Park and Hammersmith stations. The "Bristol Harbour Extension Railways" (four), and the "Canon's Marsh Railways" (four), in Clifton, Bedminster, and North and South Bristol, an opening foot-bridge and swing-bridge across the Avon: line from their West Cornwall Railway at Chacewater to their East Wheal Rose branch at Newlyn, through Kenwyn, St. Agnes, Perranzabuloe and St. Allen. *Great Northern:* Line from their Bulwell Forest station (Leen Valley) at Bestwood Park, to Basford, Notts; widen main line, both sides, from Sandy to Offord (14 m.), and from Yaxley to Fletton (4 m.); dissolution of the Royston and Hitchin Railway Company; to establish a savings bank for their officers, workmen, and apprentices, and their wives and children, being minors, and to erect dwellings for the labouring classes on the Company's lands. *Midland:* A line from New Mills, Derby: through Glossop, Newtown Disley, Marple, Bramhall, Stockport, and Cheadle to Heaton Mersey, Lancs: and to take over the Kettering, Thrapston, and Huntingdon Railway. To fill up and embank the spaces under the viaduct carrying their goods and mineral lines over the St. Pancras-gardens (burial ground), and for sundry minor powers. *Midland and Great Northern Joint Committee:* An "Austin-street" branch from North Runcton to St. Margaret, King's Lynn; lines from their Union line at Caister-road to the mackerel and herring market, Lowestoft (10 m.), through Great Yarmouth, Runham, Vauxhall, Southtown, Gorleston, Hopton and Gunton; a dock at Gorleston; to take 10 a. of Southtown Common for the new line and dock; widen line at King's Lynn station: (*vide* also *ad hoc* under "Great Eastern.") *London and South-Western:* For the Meon Valley line from their Farnham station to Alton (about 25 m.), on their Farnham and Winchester line through Titchfield, Wickham, Soberton, West and East Meon, East Tisted, Newton Valence, Faringdon, and Chawton; to widen their line at Alton. Various powers: Widen main and suburban lines at Clapham Junction and Wandsworth, main line between Basing and Woking, and branch between Farnham and Alton; to take certain lands, &c., including Battersea Grammar School and 2½ r. of Newnham or Hook Common; widen and improve, jointly with the London, Brighton, and South Coast Railway, Portsmouth Harbour station. *Sheffield & District:* A line (with branch to the Midland) from Midland main line between Attercliffe and Brightside stations to their authorised line (1895), which connects the manufacturing quarters of Sheffield with the East to West Railway; by means of the Lancashire and Derbyshire and the Sheffield District lines the Great Eastern obtain access to Sheffield and the coalfields around, the first-named line from Beighton and Chesterfield to Lincoln, 55 m., being nearly completed, and now opened for mineral and goods traffic. *Hull and South Yorkshire Extension:* For incorporation of a Company to construct railways from the Hull and Barnsley Railway at Elmsall to Wath-upon-Dearne, where a junction will be made with the Manchester, Sheffield, and Lincolnshire (S. Yorks) Railway; taking nearly 4 a. of Moorhouse and Hooton Pagnell Commons. *Woodhouse and Conisborough:* From Handsworth through Orgreave and Rotherham, to Treeton; from Treeton through Rotherham, Thrybergh, Ravenfield, Firsby, Denaby, and Mexborough to Conisborough. *Dearne Valley, W. R. Yorks:* Lines in connexion with the Midland, Manchester, Sheffield, and Lincolnshire, Hull and Barnsley, and Swinton and Knottingsley Railways; a dock at Mexborough, by the confluence of the Rivers Dearne and Dun; and to take 5 a. of Mexborough Low Pastures. *Skipton to Linton:* From the Midland at Embsay, through Stirton, Gargrave, Burnsall, Flasby, Hetton, Rilstone, Cracoe, and Threshfield to Linton (14 m.). *Macclesfield to Leek:* Line from Prestbury (L. & N. W. Railway), Macclesfield, through Sutton, Gawsworth, Bosley, Wincle, Heaton, Tittesworth and Lowe to Leek (15 m.), with a branch to the North Staffordshire Railway at Sutton. *Manchester, Sheffield and Lincolnshire:* From their line at Eydon, Northants, through Canon's Ashby, Moreton Pinkney, Thorpe Mandeville, Cropredy, Edgcote, Chalcombe, and Banbury, to join the Great Western Railway at Warkworth (14 m.); to acquire further lands in Marylebone parish, London; and to change the Company's name. *Chatham Loop:* A line from the London, Chatham and Dover Railway at Chatham, through Rochester, Strood, Gillingham, Rainham, Upchurch and Luton to that Company's line at Newington, near Sittingbourne (9 m). *Crowhurst to Bexhill:* For a line from the South Eastern at Crowhurst, through Hollington and Sedley to Bexhill, taking ½ a. of Bexhill Downs. *North Pembrokeshire and Fishguard:* Lines from Litterston to Clynderwen, and Carmarthen to Gowerton and Aberdare; abandonment of their Llandilo Loop line (1895).

Bute Docks Company: New lines with branches to or near Pontypridd and Treforest, and at and near Cardiff; diversion of the river Taff for about 1,170 yds. from the head of their low water pier to the entrance channel into the Bute Docks; and to take 3 acres of Coed-pen-marn Common at Pontypridd. *Vale of Rheidol:* for a company to make a light railway, of 2 ft. gauge, from Aberystwyth to the Devil's Bridge, co. Cardigan. *West Highland:* Various short lines in Inverness-shire, and near Spean Bridge, with one from Fort Augustus to Inverness. *Caledonian:* New railways in Lanark and Dumfries. *Callander and Oban:* New lines, and to widen their line at Oban. *Dublin, Wicklow, and Wexford:* A line from their New Ross extension at Rosbercon to Ferrybank, Waterford, on the Waterford, Limerick, and Western Railway. *Fishguard and Rosslare:* New line from Rosslare to Waterford. *Hastings:* A company for lines from the old Fish Market to Ore (S.-E. Railway), and from Ore to Silverhill and district; also for a sea-wall and parade from the harbour works to Ecclesbourne Glen. By another company, for a line from the harbour to Hollington (S.-Eastern Railway), and thence to Bulverhythe (L.B. & S.C. Railway).

For extension of time under authorised Acts: London, Walthamstow, and Epping Forest (1894-95), which works, under another Bill, it is sought to abandon: Charing Cross, Euston, and Hampstead (1893): Ealing and South Harrow: and Birmingham, North Warwickshire and Stratford-upon-Avon (1894). For abandonment of their authorised undertakings by the Kingstown and Kingsbridge Junction (1887), and the S. Yorkshire Junction (1890).

To the Light Railways Commissioners for an Order for a light railway from Cheltenham (Midland station) to Winchcombe, Glouc.; 4 ft. 8½ in. gauge.

TRAMWAYS.

BILLS.—*London County Council:* To purchase the undertakings of the North Metropolitan Tramway Company (1869) and London Street Tramway Company (1870). *North Metropolitan:* Two Bills for lines* from Shoreditch to Cambridge-road, Amhurst Park to Upper Clapton-road, Barking-road to East Ham, Manor Park to Ilford, Holborn Town Hall to the "Angel," Theobalds-road to Bury-street, Bloomsbury; Pentonville to High-street, Islington; Islington and Camden Town to Holloway, and in Hackney. By the Corporations of Swansea,* Sheffield, and district around,* Southampton, for additional lines, and purchase of the Southampton Tramway Company; Neath, additional lines in the borough and its vicinity, and to acquire the Neath and District undertaking (1873), and Halifax.† *Manchester Carriage and Tramway Company:* Lines in and through Eccles, Manchester, Ashton-under-Lyne, Worsley, Altrincham, Droylsden, Withington, &c. *Swansea Improvements and Tramway Company:* For use of mechanical power and electrical works. *City of Birmingham Tramway Company:* Lines† in the City, Aston, Yardley, King's Norton, &c. *New General Traction Company of London:* Tramways† in Norwich and Coventry, by electricity (overhead or otherwise). *Bristol Tramway and Carriage Company:* Several lines* in Bristol and the suburbs. By certain "promoters" for lines in Hastings and St. Leonards, from the Albert Memorial along the sea front to West St. Leonards†; in Newport, Mon.; for taking over the South Staffordshire and other local tramway companies, with new lines in Wolverhampton, Wednesfield, Handsworth, Bilston, Kingswinford, Wednesbury, Dudley, Stourbridge, Birmingham, &c.; and *Dublin United Company*, new lines.

PROVISIONAL ORDERS.—By the Corporations of Blackpool and Huddersfield.* *Cardiff Tramway Company:* Several new lines* within the borough, by electricity (overhead or otherwise). *Great Grimsby Street Tramway Company:* New lines,* by electricity (overhead or otherwise). *Imperial Tramway Company:* In Middlesbrough, Stockton-on-Tees, and Thornaby. *Liverpool United Tramway and Omnibus Company:* To work all the tramways in Liverpool, Bootle, and Litherland by electrical power, and using the overhead, or trolley, or traction, or other system. *Reading Tramway Company:* For Reading and Caversham.† *Worcester Tramway Company:* Several lines (3 ft. gauge) within the city. By certain "promoters" for lines in Carlisle,† Manchester,* Moss-Side (Lancs.), Morecambe; Yarmouth and Caister,† with acquisition of the undertaking authorised by the Yarmouth and Gorleston Tramway Order of 1883; Cardiff to Penarth,* and in Weston-super-Mare.*

In most of the foregoing provision is made for the adoption, if deemed expedient, of mechanical power.

ELECTRICITY AND ELECTRIC LIGHTING.

PROVISIONAL ORDERS.—To produce, store, and supply electricity, electrical energy and power, and deal in plant and machinery, by the Corporations of Bangor, Brighouse, Darwen, Dudley, Ipswich, Morley, Southampton (an enlargement of their order of 1895, so as to include the entire borough), and Wrexham; by the Urban District Councils of Barking, Wimbledon, Ambleside, Bexhill, Dorking, Droylsden, Farnworth (Lancs.), Garston, Kearsley (Lancs.), Levenshulme (lighting only), Morecambe, Moss-Side (Lancs.), Newmarket, Ramsbottom (Lancs.), Redditch, Stretford (Lancs.), Swadlincote (Derby), Tonbridge, Wallasey, Wilmslow (Cheshire), Withington (Lancs.), and Ventnor; and the Vestries of Fulham and St. Mary, Newington, with acquisition of so much of the London Electric Supply Corporation's Order (Act, 1889) as applies to the parish, and to light within two years from the date of the desired order, Borough High-street, Newington Causeway, Great Dover-street, New Kent-road, Newington Butts, and Kennington Park, Walworth, and Camberwell roads. By the following companies—*London Electric Supply Corporation:* For such parts of St. Margaret and St. John, Westminster, parishes as lie south of the bridge, Bridge-street, Parliament-square, and Victoria-street. *County of London and Brush Provincial:* In Bermondsey, Rotherhithe, Brixton, Tulse Hill, Herne Hill, and St. Mary, Newington; Holborn District B.W. district (east of Gray's Inn-road), the Liberty of the Charterhouse, and parts of St. Leonard, Shoreditch, west of the City-road; St. George's-in-the-East, Bethnal Green, Mile End, Limehouse, and Poplar; and Fulham parish. *Blackheath and Greenwich District:* For Greenwich, Charlton, Eltham, Kidbrook, Lee, and Lewisham. *Bournemouth and District:* Poole and Branksome. *British Insulated Wire Company* (of Prescot): Huyton-with-Roby, Whiston, Knowsley, Rainhill, and Eccleston. *Leatherhead:* For the urban district. *Llandridnod Wells:* For the urban district. *Rottingdean:* For Rottingdean, Ovingdean, and Woodendean. *Walton-on-Thames:* In Walton, Hersham, and Oatlands; and by the *Weymouth Consumers' Gas Company.* By *J. C. Howell*, of Llanelly, to supply the borough of Tenby, and Pembroke, and Pembroke Dock; and by *Lord de la Warr and Robert Kersey* to supply certain parts of Bexhill. Also for Bury St. Edmunds, Mount Embo and Dornoch, Forsinard, Melorch, and Port Skerrat, Dundalk, Ballymena, Clontarf, and Hill of Howth.

WATER SUPPLY.

BILLS.—*London County Council:* For acquiring, by agreement or arbitration, the undertaking of the East London (1853), and in that event to proceed with those of the Kent (1809), West Middlesex (1806-10), New River (first Acts, 13 Eliz. c. 18, and 3 and 4 Jas. I., c. 18 and c. 12), Lambeth (1848), Southwark and Vauxhall (1852), Chelsea (1852), and Grand Junction (51 Geo. III., c. 169), companies; for raising money therefor by creation of consolidated stock or annuities, and powers to include in their county rate precepts such sums as may be requisite for purposes of such purchase. *New River:* Aqueducts and lines of pipes from their Staines reservoirs to new reservoirs and filter-beds at Kempton Park; from their new pumping station there to an equalising reservoir and pumping station at Cricklewood, and thence to a new service-reservoir, with pumping station, at Fortis Green, with subsidiary lines in Heston, Norwood, Greenford, Wembley, Twyford, Willesden, Hendon, Finchley, and Hornsey; taking 1½ acres of Hounslow Heath, but reinstating the ground surface. The aqueduct from Cricklewood to Fortis Green is to be laid by Golders Green, the "Spaniards" at Hampstead Heath, and the Mutton brook. *East London:* Two new storage reservoirs, with aqueducts, &c., at Edmonton and Tottenham, taking a total of 100 acres of Chingford, Wild, and Mitchley Marshes in Chingford and Tottenham parishes; and to divert and impound waters from the Lea, Ching Brook, and Tottenham Mill Stream and Lead. A Water Board for Beckenham, Bromley, Dartford, Erith, Bexley, Bromley, and Sevenoaks districts, purchase of the Kent Waterworks Company, and so much of the Lambeth Company's undertaking as relates to Kent.

For additional works and extended area of supply: by the following Corporations—Chichester, taking over the Chichester Water Company; Eastbourne, taking over the Eastbourne Water Company;* Harrogate, and purchase of the Harrogate Water Company; Loughborough, with a reservoir at Whitwick; Maidstone; Manchester, and to buy the Manchester Water Company; Newark; Newport, Monmouthshire, with reservoir at New Church West by an embankment across the Castroggy brook, and one in Llanvaches by embanking the Llanvaches brook; Nottingham; Southampton, taking over the South Hants Water Company; and Tynemouth, with acquisition of the North Shields Water Company.

By the Deal and Walmer District Council for a Joint Water Board, taking over the "Company of Proprietors of Deal Waterworks," the minor provisions include the registration and control of plumbers; and a Water Board for Gravesend and Northfleet, with purchase of the Gravesend and Milton Water Company—this same purchase is proposed by a separate Bill of the Gravesend Corporation. A joint Water Board of representatives of Blackpool Town Council and the Urban District Councils of Fleetwood, Lytham, St. Anne's-by-the-Sea, and Kirkham, with purchase of the Fylde Water Company. East Warwickshire Water Company, with reservoir at Astley; Weymouth Water Company; Lowestoft Water, Gas, and Market Company; Harrogate Water Company,

* 4 ft. 8½ in. gauge.
† 3 ft. 6 in. gauge.

* The Eastbourne Waterworks Company promote a Bill for new works with pumping-station at Holywell.

with reservoir by an embankment of Scargill brook; new Companies for supply of St. Neot's and Crowborough (Sussex) and the districts around; reincorporation of the Newhaven and Seaford Water Company, with new works and extension of area. The Reigate Corporation seek to alter and reduce the existing charges of the East Surrey Water Company, to prescribe a fresh scale of rates chargeable within the borough, and to require the Company to supply the Corporation for public purposes, and other persons for trade or business purposes, by meter, at a prescribed charge per 1,000 gallons.

PROVISIONAL ORDERS.—For new works and extension of area of supply by the Royston, Gosport, South Hayling, and Frith Hill, Godalming, and Farncombe Water Companies; and by certain "undertakers" for works to supply Steyning, Bramber, and Upper Beeding, Benfleet, Hadleigh, and district (Essex), and Duntocher and Dalmuir.

GAS.

BILLS.—By the Urban District Councils of St. Anne's-on-the-Sea (Lancs.), with purchase of the existing Gaslight and Coke Company; Swadlincote, with extension of area and acquisition of the existing Gas and Coke Company; Malvern, with purchase of the Malvern Link Gas Company, and additional works; Malvern Link, with that same purchase; and Cowes, with purchase of the Cowes Gas Company, and extension of area. A Company to supply Tuxford and district (Notts); by the Crays Gas Company, and Weymouth Consumers' Gas Company, for extension of area; and by the Ashford, and the Arundel Gas and Coke Companies, for reincorporation and extension of area. The South Metropolitan Gas Company seek for powers to alter the qualification of a director.

PROVISIONAL ORDERS.—For additional works and extended areas, by Droitwich Corporation; and the Market Harborough, Harrogate, and Wimborne Gas Companies.

GAS AND WATER.

BILLS.—By the Corporations of Lowestoft, for extended area and purchase of the Lowestoft Water, Gas, and Market Company, and Falmouth for purchase of the Falmouth Gas Company and Falmouth Water Company. By the Urban District Councils of New Hunstanton, with acquisition of the Hunstanton Gas Company and Hunstanton Water Company; and of Caerphilly, for three new reservoirs at Eglwysilan and Llanfabon, by damming three brooks; for dissolution into a new Company of the Hunstanton Water Company and the Hunstanton Gas Company, with additional works and area; for a Company to supply Rhymney and the Aber Valley district, with acquisition of several local gas and water Companies, and to take 3 a. of Gelligaer Common.

The Tendring Hundreds Water Company and Clacton-on-Sea Gas and Water Company apply for a Provisional Order for waterworks at Ardleigh (Phœnix Mill) and enlargement of area of supply.

THE SANITARY INSPECTORS' ASSOCIATION.

THE first monthly meeting for the year of this Association was held on the 2nd inst. at Carpenters' Hall, London Wall, with Mr. W. W. West (Chairman of Council) presiding. After the election of thirty new members and the adoption of the terms of a letter of condolence to the widow of the late President (Sir B. W. Richardson), Dr. Newsholme (Medical Officer of Health of Brighton) read a paper on "The Prevention of Tuberculosis." A discussion followed the reading of the paper, on a resolution of thanks, proposed by Mr. Dee (Westminster), and seconded by Mr. Gardiner (Worthing). The motion was supported by Mr. Billings (Holborn), Mr. Pettitt (Kensington), and several members of the Council. Mr. Alexander (Shoreditch) concurred in the statement that the overcrowding, dampness, and insanitary surroundings of the dwellings of the poor made consumption the most prevalent among the poor. Mr. H. Thomas (Bermondsey) suggested that the paper should be printed, and circulated widely, the attention of County, District, and Town Councillors, and members of Vestries and Local Boards, being especially called to the paper. Mr. Grigg (Fulham) said he could have wished that certain country members, in districts containing a large number of back-to-back houses, who were advocates of that class of dwellings, could have heard the paper. He inquired whether there was any means of ascertaining if a higher death rate from consumption prevailed in districts where back-to-back houses abounded than in other districts where the houses had through ventilation. Mr. Lightfoot (Chelsea) adverting to the difficulty, among certain classes of the population, in getting people to keep their houses clean, referred to the decision of a London magistrate to dismiss a summons brought against a householder for not properly cleansing his house. The magistrate said that if the house was unfit for human habitation he could give a "closing order," but he had no power to give a "cleansing order." The Chairman, in closing the discussion, said Dr. Newsholme had told them that the abolition of private slaughter-houses was one of the means to be adopted for the prevention of tuberculosis. He thought that the building of proper houses for the people to live in was no less important. Sanitary inspectors should insist upon the houses of the poor being constructed not simply with regard to the drains, but with due regard to through ventilation. The vote of thanks having been accorded with acclamation, Dr. Newsholme briefly replied, and the meeting terminated.

Correspondence.

To the Editor of THE BUILDER.

COPPER ROOFS.

SIR,—I should be glad to know if any modern copper roof can be referred to which has been erected within the last three or four years and which has acquired that green colour we so much admire in ancient roofs. My experience, as far as it goes, is that if the green colour does not come at once it never comes at all, not even in the air of the Cumberland Lake district after an exposure of ten years.

In order to try it on the East coast I have for two years had a specimen of sheet copper exposed on the roof of one of the masons' sheds at Bamburgh Castle, 150 ft. above the sea level, with no apparent change in colour. On the other hand, copper gratings in an unoccupied building adjacent to these sheds turned a beautiful green colour in a few days; the cast metal was, of course, an amalgam. It had been suggested to me that such an amalgam as Muntz metal, which is, I believe, 1·50 of copper to 1 of zinc, would give the desired colour on roofs as it does when applied as sheeting to ships' bottoms. I shall be glad if any of your readers can tell me if it has ever been so applied, and with what result.

CHARLES J. FERGUSON.

RE RIGHT TO ARCHITECTS' PLANS.

SIR,—With reference to your report and observations in your issue of 26th ultimo, the following is a case for the consideration of the profession:—

An architect was employed to design a pair of villas. The work was carried out, and both the architect and contractor were paid, and the houses are occupied. The client now demands the plans, specifications, and map of sewers. There was no stipulation that these should be given, and the question is, would a court be likely to hold that these documents, having been all along in the architect's possession, should now be given up? If so, see how unjustly such obligations might work—that after one pair of villas are built the client can use them, *ad infinitum*, without further charge.

ARCHITECT.

HEATING HOUSES FROM KITCHEN FIRE.

SIR,—I have read with interest your comments on my book, and should like to say a few words. With reference to incrustation formed in heating apparatus, my experience has been that in the winter months, when heating apparatus is in operation, no incrustation takes place in an apparatus where the water passes from the boiler at 180 deg. Fah. But in the summer months, when the heating apparatus is shut off, incrustation is liable to take place in the boiler, tank, and domestic supply pipes unless care is taken to shut the damper, to prevent the water being over-heated.

THOMAS POTTERTON.

GOOD TEMPLAR HALL, PERTH.—Alterations and improvements at the Good Templar Hall, King-street, Perth, have just been completed. On the first floor is the main entrance of the hall, and a committee room has also been provided, besides lavatory accommodation. The south part of the floor has been fitted up as a shop, with entrances to both Canal-crescent and King-street. On the upper floor is the main hall, with waiting and retiring rooms and lavatories. The hall has been seated for between 400 and 500 persons. The buildings have been designed and executed under the personal supervision of ex-Bailie Smart, architect and surveyor, Perth, and the contractors for the different works are the following:—Mason, Thomas Dick, Broughty Ferry; carpenter and joiner, David Morrison, Perth; plumber and heating, A. & J. Davidson, Perth; plasterer, Charles Law & Sons, Perth; slater, Alexander Adie, Perth; glazier, Charles Alexander, Perth; ironwork, George Barker, Perth; painters and decorators, Hugh Mackay, Perth.

The Student's Column.

SPECIFICATIONS.—II.

EXCAVATOR.

IN dealing with this portion of the work it is advisable to prepare the site plan with rather more care than is too often done. The determination of a datum line and the careful levelling of the site before any work is commenced, and, indeed, before the plans are finally settled, will materially assist in producing accuracy in the arrangement of, and contracting for, the excavator's work. The architect should determine what are to be the levels at which the ground is to be left at the completion of the works by the contractor. The simplest way is to prepare a block plan of the site with the levels marked in different colours, say blue for those existing before the work is begun, and red for those to be left at completion. If the site is at all irregular in its surfacing before the building operations, or is intended to be so after them, it is well to add sections to the site plan. This site plan will also serve as the plan of drains, the arrangement and position of which should be determined, and shown clearly on the drawings, before the contract is made.

In order to promote even tendering amongst the competing contractors it is particularly necessary to be clear in the specification of the excavator's work. More contracts are lost and won, and more unsuspected profits made on the excavator's trade than probably on any other in the bills of quantities. In the interest of his client it is the architect's duty to give every tenderer an unquestionable basis on which to form his estimate, for it too often happens that a contractor whose general pricing is below his competitors is put out of court by a mistaken reading of some loosely expressed or improperly defined stipulation in a specification. The student therefore should guard against any temptation to the vagueness and indecision which are too frequently characteristic of the part of the specification relating to the excavator's work.

The specification should state clearly what is to be done with the earth from excavations, whether it is to be used for filling up depressions or for forming banks or terraces, or whether it is to be removed and carted away. Other points we shall notice in detail, as the clauses relating thereto are given.

Levels.—The datum line shown on the drawings is 2 ft. above the level of curb at north end of site (or define by reference to an ordnance bench-mark, or some easily accessible and well-defined point). The levels shown by the blue figures on site plan are those existing, and by red figures the finished levels.

Surface Digging and Filling.—Remove vegetable soil one spit deep, and wheel and deposit at spoil where marked on site plan. Remove present superfluous surface soil, and use earth for filling where required to make up finished levels, and cart away superfluous earth; made-up soil to be well rolled with a heavy roller to finished surface.

Excavate under boarded floors to a depth o 2 ft. 6 in. below floor level, and below paved floors to a depth of 1 ft. 6 in. below floor level.

Trench Digging.—Excavate for trenches (and basement, if any) to the depths shown on drawings, and of the following widths: for 9 in. walls, 2 ft. 6 in. wide, for 14 in. walls, 3 ft. 6 in. wide (or as the architect may desire). Level and consolidate earth at bottom.

The depths of foundations shown on the drawings are believed to be sufficient, but should a firm bottom be not reached at those depths, the contractor is to call the attention of the architect to the fact before putting in the concrete. (N.B.—Or the specification may state that the bottoms of foundations are to be approved before the concrete is laid.)

Filling-in.—All trenches to be filled in as soon as walls are above ground level. All filling-in to be well punned in layers, and watered when so directed.

Pipe Trenches.—Excavate for all water and drain pipes, and fill in and pun over same as before directed.

Surplus Earth.—All surplus earth from trenches is to be removed and carted away (or otherwise, if so desired).

Pumping.—Pump or bale out water from the trenches, and keep same dry till filled in, and supply and remove any temporary drainage requisite for this purpose.

Planking and Strutting.—Execute all planking, strutting, and shoring which may be

necessary for maintaining sides of excavations. The contractor will be required to cut out to a square section for concrete any trenches that may be allowed to fall in through insufficient support, and the concrete will have to be filled in to the extra width thereby required at the contractor's expense. (N.B.—Contractors are prone to neglect adequate support for sides of trenches, and it is important that trenches should have vertical sides, and the concrete be filled in to the full width of trench.)

Concrete.—The concrete for foundations to be composed of fresh burnt blue lias lime, and ballast of clean hard river or pit gravel, broken to pass a sieve of 2-in. mesh, and clean sharp sand, and to be mixed on a clean boarded or stone platform, in the proportion by measure of one part of lime to five parts of ballast and two parts of sand, with a sufficient quantity of water; and the whole to be thoroughly incorporated and tipped into trenches. (Or otherwise describe concrete as desired.) The concrete to be filled in to the full width of square-cut trenches, and not between boards.

(Then describe any other varieties of concrete for pavings or fireproof floors.)

Brick Rubbish.—The concrete under pavings to be laid on a bed of hard, dry brick rubbish, in. thick, and well rammed.

Provision.—(Specify any provision desired of digging or concrete for filling in to cesspools, &c., making it clear what description of digging and of concrete is required.)

Roadways and Gravelling.—(Specify what is to be done by the contractor, or provide a sum of money.)

Grubbing Up.—(If there are any hedges or trees to be removed and roots to be grubbed up, this must be specified.)

DRAINAGE.

Drains.—The drains to be laid as shown on plans with Albion Clay Company's patent Paragon pipes (or whatever is intended; but make it quite clear whether "London-made" or "tested" pipes are wanted or not. Do not say that the pipes are to be of "approved" manufacture without indicating what will be approved, as the quality varies considerably. If there is to be a difference between the rain-water drains and the soil-drains describe it thus:—

The rain-water drains to be of "A" form and the soil-drains of "B" form, all to be laid truly with joints formed and filleted with Portland cement, and the latter to rest on bed of concrete 6 in. thick, the full width of the trench).

Testing.—The contractor will be required to test the drains in the presence of the architect. (State what test will be required, whether water test, and to what head of water, lamp test, straightness of line, and gradient, &c. If the work is within province of Local Authority, add:

The drains are to be laid in such a manner as to satisfy the requirements of the inspector to the (Local Authority).

If the drains are not satisfactory in all respects, the whole shall be taken up and relaid at the contractor's expense.

Connexion with Sewer.—Give notice to the (Local Authority), and pay their fees for making connexion with sewer. (The Local Authorities in nearly all cases now require that the connexion with sewer shall be made by them, and their charges paid for same).

Cesspools.—(If there is no public sewer, these may be required. Then specify size, depth, and whether steined, dry, or in cement, as the case may be; also, whether cemented and made water-tight, as required by some Local Authorities. Specify the brick dome and manhole cover, and ventilation, if any).

Soak-away Pits.—(These are allowed in some districts. Specify size and depth, whether steined, dry, of course, and whether filled with gravel, or brick, or stone rubbish.)

Lidded Pipes.—All bends and junctions, except in inspection chambers, to have lidded pipes.

Gulleys.—(Specify as required also the slippers or open channels for sink and bath wastes. Also grease traps where wanted.)

Disconnecting Chambers. — Disconnecting chambers to be built in accordance with detail drawing by in the clear, and deep. The sides to be built one brick thick in white glazed bricks in cement, and to be corbelled over at top to receive iron covers, 24 in. by 18 in. The bottoms to be formed of Portland cement concrete, in. thick, and sloped in cement to channel. (Specify also the trap, the ventilating pipe, foot-irons, air-tight manhole cover).

Inspection Chambers.—Inspection chambers to be by in the clear (if of varied size, etter on plans and describe them separately) and without trap and ventilating pipe, but in other respects similar to disconnecting chambers.

Lamp Holes.—(Specify if any are required).

Flushing Tank.—(Describe if any with Field's syphon or other automatic arrangement. State size and construction).

(N.B.—With reference to special items connected with the drainage, it is generally better for the architect to decide beforehand what he means to adopt, and specify by a manufacturer's name, as So-and-so's gully trap No. , p.c. . Care should, however, be taken to find out if these special articles are kept in stock, and, if not, how long before they are wanted the order must be given, and this should be stated in the specification, as builders often do not order special articles till the day before, or even the day after, they are wanted on the works).

OBITUARY.

MR. E. HOWARD DAWSON.—We regret to have to record the death of Mr. E. Howard Dawson, of Lancaster, architect, and Associate of the Institute of Architects, at the early age of thirty-three, and under very sad circumstances. Mr. Dawson had gone to Manchester on business, and was taken ill in the train, whence he was carried to a hotel in Manchester where he died on the night of December 31. He had been married only three years, and leaves a widow and daughter. Mr. Dawson had carried out a considerable amount of work, and during the last seven years had been principally engaged in extensions and re-erections at the County Asylum, Lancaster. He carried out the County Police-station at Skerton, and three others in the district; the Phœnix Hall, Lancaster; the Congregational churches at Grange and Carnforth; and a good deal of work on building estates.

HERR FERDINAND SCHIEFFER.—We regret to have to record the death of Baurath Ferdinand Schieffer, whose name has long been associated with the great railway works of Germany.

HERR JULIUS HOFMANN.—In a special article, the *Deutsche Bauzeitung* refers to the excellent work done by Oberbaurath Julius Hofmann, of Munich, recently deceased, whose principal work was in connexion with the numerous castles erected and decorated for Ludwig II. of Bavaria, and explains the curious relationship of client and architect, which existed between the Bavarian King and Oberbaurath Hofmann, and the origin of what have been considered as meaningless eccentricities in these particular buildings. Herr Oberbaurath Hofmann was born in 1840, and his technical education was obtained at Vienna. He had the curious fortune of obtaining the post of Court Architect to Emperor Maximilian of Mexico, into whose service he entered in 1864, and he was responsible for two well-known royal residences in that country. After frequent changes, holding important offices, Herr Hofmann became the successor in 1884 of Professor Dollmann, as Court Architect at Munich, and it was from that date that he was particularly occupied with work on the castles of Herrenchiemsee, Linderhof and Neuschwanstein, as well as on the designs for many castles which were never built. His last work was the design of a memorial chapel to the deceased King, which will now be carried out by Professor Thiersch.

GENERAL BUILDING NEWS.

PREMISES, SELKIRK CO-OPERATIVE SOCIETY.—New premises for the Selkirk Co-operative Society, Limited, have been erected as an addition to the existing buildings. The frontage is 114 ft. long, with an average depth of 30 ft. The work has been carried out from plans prepared by Messrs. J. & J. Hall, Galashiels.

BUILDING TRADES, THE POTTERIES.—In the Potteries, bricklayers, for the time of the year, are well employed. Joiners and carpenters report trade exceptionally good for the time of the year, bench hands being well employed. There are a few outside carpenters and fixers suspended through the weather. There are, practically speaking, no joiners out of work in the district. At Leek in all branches of the building trade there is great activity for the time of the year. At Crewe all joiners and bricklayers are working full time. At Stafford trade is dull, with a few out of work in all branches.—*Staffordshire Sentinel.*

POST-OFFICE, SOUTHEND.—A new post-office has been opened at Southend-on-Sea in Weston-road. The architect was Mr. Henry Tanner, and the builders were Messrs. Davis & Leaney, the fittings being supplied by Messrs. Everett & Son, of Colchester.

RESTORATION OF MORLAND CHURCH, WESTMORLAND.—The ancient church at Morland was reopened recently after undergoing restoration at a cost of about 1,800*l.* exclusive of the chancel, which was restored by the Ecclesiastical Commissioners. Among the principal alterations was the north transept, the end of which was pulled down to the bottom of the old window and rebuilt with three windows to agree with those in the south transept. The vestry had to be pulled down so as to open out a window which was built up in the chancel wall, and that entailed the building of another vestry. The old ceiled roof has been taken away, with the exception of the principals, and replaced with a new open one. In the tower three Saxon windows have been opened out. Inside, the old pews have given way to new stalls in oak. The old three-decker pulpit has been removed to the other side of the church, and reconstructed on modern lines. The choir has been brought into the chancel, and the communion rails lowered. A new heating apparatus has been put in. The contractor for the work was Mr. Edmondstone, Morecambe, and Mr. C. J. Ferguson was the architect.

BANK, EXMOUTH.—A new building in Rolle-street, Exmouth, which is to be the new branch of the Exeter Bank in that town, has just been opened. The old premises have been altered and extended in accordance with the plans of Mr. Chas. Cole, architect, of Exeter. The building work has been carried out by Mr. A. Hayman, Exmouth.

WORKING MEN'S CLUB, NEATH.—The memorial stones in connexion with the Neath Working Men's Club were laid recently by the mayor (Councillor A. R. Thomas). The architects are Messrs. Lambert & Rees, Neath and Bridgend, and the contractor Councillor Abraham George. The new premises will have a pressed brick front, and will contain reading-rooms, a library, billiard-room, skittle-alley (97 ft. long), bar, and committee and caretaker's rooms.

PROPOSED KURSAAL AND MUNICIPAL BUILDINGS FOR CHELTENHAM.—At a meeting of the Cheltenham Town Council, on the 4th inst., the Town Improvement Committee made its report on the proposed spa scheme, &c., for the town. The Committee had engaged the services of Mr. E. R. Robson, architect, Westminster, and he had had several interviews with the Committee, and had prepared plans for the erection of a kursaal and baths at the south end of the Winter-garden, and for the conversion of the existing Winter-garden into municipal offices and a winter-garden. Mr. Robson estimates the expenditure to be as follows, viz.:—50,000*l.* if all the work is done at once, and 53,700*l.* if done in sections. The Committee recommend that tenders for the erection of the buildings be advertised for in such sections as the Committee may decide on, and that application be made to the Local Government Board for their sanction to a loan. After a brief discussion, it was decided to adjourn the whole matter to a special meeting of the Council, to be called for the 22nd inst.

SCHOOL NEAR LOWESTOFT.—A new voluntary school has just been opened at Carlton Colville by the Lord Bishop of the Diocese. The architect is Mr. F. W. Richards, of Lowestoft, under whose direction the school has been built, at a cost of 1,110*l.* Mr. W. J. Scarle carried out the brick, and Mr. A. G. Beckett the wood work. The interior of the building is 98 ft. by 22 ft., divided by a sliding partition, both girls and boys being accommodated. It is constructed to hold 200 children.

RESTORATION OF ST. PETER'S CHURCH, BARTON-ON-HUMBER.—This church is about to be restored. The work is to be put in hand at once, under the superintendence of Mr. C. Hodgson Fowler, of Durham. The scheme comprises the building of an organ chamber on the north side, a new clergy vestry, restoration of the tower, renovation of the interior walls, and the purchase of a new organ.

NEW ACCIDENT HOSPITAL, ALLOA, N.B.—This new building is to be erected on a site immediately to the west of the existing Hospital, from plans prepared by Mr. R. A. Bryden, architect, Glasgow. There will be two entrance gates on a new road leading to the hospital buildings. The main building will consist of a central administrative block, and two wings. Each of the wings will contain one ward for six beds, one ward for three beds, and two private wards for one bed each. All these wards will face the south. The wards will be approached from the central part of the building by wide corridors. From these corridors the latrines will enter at the back; ward sculleries are also provided enteringoff the corridors. Observation windows are arranged in the wards. The floors of the wards are of pitch pine, and all corners are rounded. The lower walls of the corridor are lined with tiles, and each corridor has an exit porch for convalescent patients obtaining access to the grounds in rear of the buildings. The central part of the building contains toward the front, the entrance vestibule, doctor's room, and men's and women's day-room, behind which are placed the operating-room, doctor's store, kitchen and scullery service, pantry, and matron's storeroom, &c. The central building is two stories in height, and on the upper floor contains matron's rooms and seven bedrooms. In the rear of the main hospital building will be erected the offices required, comprising washing-house, laundry, boiler-shed, store for patients' clothing, mortuary, and post-mortem room.

BUILDING IN HIGH-STREET, SHEFFIELD.—The progress of Sheffield in the direction of the improvement of the city has been greater and more marked during 1896 than in any previous year since the City Council woke up to the fact that so large and important a centre was deplorably behind the times in the character of its buildings and main thoroughfares. The

widening of High-street was in this connexion the most notable event of the year. A change which brings the converging thoroughfares of Fargate and Church-street and the noble block of Cole's buildings within the line of vision of the pedestrian standing at the Post Office, and affords a fine, spacious thoroughfare in the place of one that was tortuous, narrow, and awkward, is so decided an improvement in the city's main artery that the lethargy of preceding Councils on this subject only evokes surprise. The buildings in High-street completed during 1896 include the London and Midland Bank, at the corner of York-street, the lofty pile raised by Messrs. Foster & Sons, and the pretty terra-cotta building of the Grand Clothing Hall. The Café Company's premises consist of the original premises set back to the prescribed line. The new premises of Messrs. F. E. & S. Smith were the first to appear behind the disappearing bricks and mortar, and now the Victoria Hotel is practically completed. As yet the new roadway is only temporarily laid, awaiting the solidifying effect of the traffic, and the completion of the connecting link of the new sewer, which extends from the Monolith to the Church Gates, and from Change-alley to the top of Commercial-street. This sewer replaces the rotten and ineffective drain which was in places simply carved out of the rock in its course.—*Sheffield Telegraph.*

RESTORATION OF ST. GEORGE'S CHURCH, WOLVERHAMPTON.—This church is undergoing restoration at a cost of 2,500*l.* Among the alterations being carried out is the entire removal of the galleries, the re-flooring with wood blocks, a new organ, modern oak seats in place of the old high pews; a new choir vestry is provided, and the chancel window is filled with a representation of the Crucifixion, and a carved oak screen is erected across the entrance to the chancel. Mr. T. Skett has the contract, and the architect is Mr. Beck.

LABOURERS' DWELLINGS IN MILK-STREET, BIRMINGHAM. — The Birmingham Improvement Committee, in their report to the City Council, recall the proceedings that have been taken in relation to the improvement scheme for the insanitary area in Milk-street, under which the land was acquired by the city and cleared of its objectionable buildings. The Committee now report that they have been unable either to sell or let the land as subject to the conditions laid down by the Local Government Board, and have therefore given their most careful attention to the preparation of plans for houses suitable for the labouring classes. 103 dwellings suitable for the artisan class, at rents varying from 5s. to 6s. each, with three bedrooms, have been erected in the vicinity of Ryder-street, and the committee, having provided so many houses of this class, feel they would like to supply a dwelling suitable for that portion of the working class who are earning a labourer's wage. Drawings are submitted by the Committee showing such suggested dwellings, from which it will be seen that it is proposed to erect upon the site sixty-four dwellings, each having a living room 12 ft. 6 in. by 11 ft.; bedroom, 12 ft. 6 in. by 9 ft.; bedroom, 11 ft. 3 in. by 8 ft.; water-closet; scullery to every two houses, 10 ft. by 8 ft. 6 in. These houses are designed on the dual-house system—viz., one house built upon another, access to the upper tier of houses being obtained by a balcony running the whole length of the rear of the dwellings, and are estimated to cost 6,250*l.* The rent proposed to be charged is for the lower houses 4s. 3d., and the upper 3s. 9d. Although, in accordance with the requirements of the Local Government Board, only one half of the site has been cleared for building, the remaining part is wholly unoccupied, and the materials in the buildings rapidly disappearing; under these circumstances it is suggested that the scheme be carried through in one contract, and the committee therefore recommend that the proposed scheme be approved, subject to such modifications as they may deem advisable, and that the Finance Committee be authorised to borrow a sum not exceeding 6,250*l.* for the purpose of carrying out such scheme.—*Birmingham Post.*

NEW HOTEL NEAR THE CENTRAL STATION, MANCHESTER.—Before the details of the new hotel proposed to be erected close to the Central Station by the Midland Railway Company are finally decided upon, Mr. C. Trubshaw, F.R.I.B.A., the Architect of the Company, and Mr. William Towle, the manager of the Company's hotels and restaurants, are to proceed to America in order to make a tour and inspection of the large hotels in the States. The new hotel, which it is proposed to make one of the largest and finest in the country, will occupy the site at present bounded by Lower Mosley-street, Windmill-street, Mount-street, and Peter-street. One of the chief features will be a large courtyard in the style of a winter garden. To take the place of the Gentlemen's Concert Hall, which is one of the buildings to be demolished to make way for the new hotel, a large concert room will be attached to the hotel, but the entrance will be a separate one.—*Manchester City News.*

THE STATE OF BOCKING CHURCH.—A vestry meeting was held at Bocking recently, Col. Savill presiding, to consider the report of the architect (Mr. F. Chancellor) upon the condition of the church fabric. The report urged the necessity of a thorough examination of the whole of the roof of the church. Mr. Chancellor had examined the chancel arch and the pillars supporting it, and had come to the conclusion they would have to be taken down and rebuilt. About 500*l.* or 600*l.* was required to carry out this work. The Chairman said this sum would not put the church into a thorough state of repair, but only the roof and chancel arch. A committee was formed to collect the money for the carrying out of the work.

BAPTIST CHAPEL, BEXHILL.—The new Baptist place of worship in Clifford-road, Bexhill, was opened recently. The new building is in the Gothic style. The chapel proper is about 45 ft. by 27 ft., and there are two vestries in the rear. The contractor was Mr. C. Thomas, the architect being Mr. R. W. Moore, of Brighton.

BUILDING TRADE, STONEHAVEN.—Trade in Stonehaven during 1896 has been on the whole of a most satisfactory character. The building trades have had a busy year. The large amount of work carried over from 1895 kept all well employed during the early months of the year. During summer a slight lull set in. Towards the end of the year, however, a number of important contracts were settled, and from the number of buildings now in progress or projected the coming spring is certain to be a busy one.

NEW SCHOOLS, BELFAST.—A new school has been erected in Mayo-street, Belfast. Messrs. Young & Mackenzie, architects, superintended the work of erection, which was in the hands of Mr. William Kerr, builder.

HEADQUARTERS FOR LEEDS MEDICAL STAFF CORPS.—The Leeds Volunteer Medical Staff Corps have commenced the erection of offices and hall in St. James's-street. The drill hall will be 68 ft. in length, and will have a width of 35 ft., with a wood block floor resting on a bed of concrete. The roof is to be of wrought iron. The other buildings will comprise quartermaster's office, stores, and residence of the staff-sergeant, while outside the main block a lavatory will be fixed, and a shed erected for the service waggon. The whole of the work is to be carried out in accordance with plans prepared by Mr. William Bakewell, of Leeds.

CONDITION OF THE PARISH CHURCH, TAMWORTH.—Owing to the anxiety felt as to the safety of the south-west pinnacle of the tower of the old church at Tamworth, the vicar and churchwardens considered it advisable to take the opinion of Mr. Basil Champneys, who has made a careful survey. In a report, Mr. Champneys states that, in regard to the turret, there is a considerable inclination towards the west. He advised that the top of the spirelet be at once taken down to the level of the bed above the second crotchet from the top. Steps are being taken to have the more dangerous portion of the pinnacle at once removed, and when funds are obtained the remainder will be taken down, and the whole re-erected in a substantial manner. The three other pinnacles of the tower have all been rebuilt during the present century.—*Birmingham Post.*

THE NEWCASTLE INFIRMARY SITE.—In connexion with the proposed erection of a new infirmary for Newcastle, the question of site has been advanced another stage by the receipt of the report of Mr. Waterhouse, who was called in to advise the House Committee on this matter. Mr. Waterhouse, it is stated, favours the erection of a new hospital on the present site. He considers it will afford ample space for the erection of a first-class modern hospital, of 400 beds, with the necessary administrative buildings, and accommodation for eighty nurses. Mr. Waterhouse is further of opinion that the work of constructing the proposed new hospital may be carried on without in any way interfering with the work of the Infirmary during the period which will be required for the construction of the building.

CHURCH FOR THE WREXHAM DISTRICT. — The plans sent in by Mr. J. H. Swainson, Wrexham, for the new church, to be called St. Peter's and to be erected at Rhosrobin, in the parish of Rhosddu, a suburb of Wrexham, have been adopted.

RESTORATION OF TOWER, HINDERCLAY CHURCH, SUFFOLK.—The tower of Hinderclay Church has for some time been in a critical condition. It was lately inspected by Mr. W. Fawcett, F.S.A., of Cambridge, and by his advice, the work of restoration was undertaken.

SANITARY AND ENGINEERING NEWS.

LIGHT RAILWAYS, ABERDEEN.—There are two rival schemes for light railways from the City of Aberdeen to the Skene and Echt districts. That promoted by a private syndicate, which has met with most favour in the localities to be served, is estimated to cost 108,571*l.* The other, promoted by the Great North of Scotland Railway Company, is expected to cost 60,000*l.*, and is proposed to be worked in conjunction with the city tramways and with a proposed circular railway to be formed by making through the suburbs of Aberdeen a connexion between the Deeside line and Great North main line, there being already a through connexion at the existing joint passenger station. The G.N.S.R. shareholders have approved of the application and order. These schemes will be considered at the first sitting of the Light Railways Commissioners in the North of Scotland.

BRIDGE, NEAR DURHAM.—Mr. C. A. Harrison, Engineer to the North-Eastern Railway Company, has designed a bridge to cross the Browney stream at Relly Mill, about a mile south of Durham. The new bridge will be of red brick, and includes five arches, each with a span of 60 ft.; and when completed the bridge will measure 300 ft. long, and 70 ft. high at the deepest arch.

DRAINAGE OF RUABON.—On the 1st inst., at the Court-house, Ruabon, Colonel Marsh, R.E., one of the Inspectors of the Local Government Board, held an inquiry as to an application by the Wrexham Rural District Council for a loan for the purpose of draining the village of Ruabon. The village has an estimated population of about 1,700, and the older and lower portion is at present drained by a system of pipe or brick sewers into the Ruabon Brook. The new portion at Bryn, which has a population of nearly 700, is at present drained into cesspools. Mr. E. B. Martin, of Stourbridge, has prepared a scheme, which he explained. The total cost of the works was estimated at 6,830*l.* There was no opposition.

SEWAGE QUESTIONS IN SOUTHPORT DISTRICT.—The report by Mr. Mansergh on the treatment of sewage in view of the early silting up, through the Ribble works, of Crossens Channel, has been received and referred to a sub-committee of the Southport Corporation for report. It is understood that Mr. Mansergh advises an initial expenditure for pumping and filtration works of some 30,000*l.*, to be afterwards doubled by carrying out a complete scheme.

SEWERAGE, KNOTTINGLEY, YORKSHIRE. — An inquiry on behalf of the Local Government Board was held recently at Knottingley by Colonel Hasted, R.E., in regard to an application by the Knottingley Urban District Council for powers to borrow 13,000*l.* for works of sewerage. Mr. E. D. Atkinson, clerk, explained the scheme, which has been prepared by Mr. J. Richardson, engineer, Methley.

THE ULLET-ROAD SEWER BURST, LIVERPOOL.—The Health Committee of the Liverpool City Council, at their last meeting, had under consideration a number of letters complaining of the damage done to property by the recent bursting of a sewer in Ullet-road, Sefton Park, and resolved: "That, although the committee consider that the accident to the Ullet-road sewer and the damage done thereby was caused by the exceptionally heavy rains which took place on the evenings of December 24 and 28, they think that, without admitting any legal liability on the part of the Corporation, the Corporation should repair the actual damage to property by the accident, and that the matter be referred to a sub-committee consisting of the chairman, deputy-chairman, Mr. Campbell, and Mr. Thomas, to see the parties affected, and to authorise any works to be carried out which the sub-committee may think necessary." It was also decided to instruct the treasurer to pay all extra wages on the works as certified and directed by the City Engineer, who was authorised to obtain such machinery and materials as he might require for completion of the works.

STAINED GLASS AND DECORATION.

WINDOW, BRAMSHOTT CHURCH, HAMPSHIRE.—A window to the memory of the late Mr. Alexander Macmillan, the publisher, and to his son, the late Mr. Malcolm Kingsley Macmillan, has been placed in the north aisle of Bramshott church, in Hampshire, in which parish Mr. Macmillan had a residence. The window is the work of Mr, H. Holiday, of Hampstead.

MEMORIAL WINDOW, TRINITY CHURCH, WINDSOR.—A memorial window has been placed on the north side of Holy Trinity Church, Windsor. The window depicts the Annunciation. The work was executed by Messrs. Campbell & Smith, of London.

FOREIGN.

FRANCE.—M. Gougeon, pupil of M. Lalou, has won the prize for the competition of American architects, the subject of which was "A large factory in Alaska."——M. Scellier de Gisors, architect to the Luxembourg, has been elected Inspector-General of "Bâtiments Civils et des Palais Nationaux," in place of M. Daumet, who has reached the limit of age.——M. Roty has just been elected President of the Académie des Beaux Arts, and M. Emil Barrias has been elected Vice-President.——There is a talk of uniting the Sceaux line of railway with the line of the Ouest, by means of a branch line of railway, the cost of which is estimated at three million francs. It will leave the Robinson station and end at Clamant, going by Plessis Piquet, Bagneux, and Châtillon.——There is an exhibition in the Rue Volney of the new works of the Russian painter Verestchagin. The most interesting picture in the collection is one of the retreat of Napoleon I. in the Russian Campaign.——The thirteenth exhibition of impressionist and symbolical painters has just been opened in the Gallery "Barc de Bouteville," in the Rue Pelletier.——A new bridge is shortly to be built over the Seine between Gennevilliers and Clichy.——The municipality of Bourg has just voted a sum of 320,000 frs. for the rebuilding of the theatre in the town.——The work of making a line from Cauterets to Laraillère, passing through the tunnel of Estaing

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Designs for (Working Class) Houses..	Folkestone T.C.	10l.	Feb. 13
*Enlargement of Corn Exchange, Spalding	Spalding U.D.C.	15l. 10s.	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Pipe Sewers, Queen's-road	Hertford Corp.	J. H. Jevons, Surv. Town Hall	Jan. 12
Pipe Sewer, Newport-street	Walsall Corporation	J. R. Cooper, Town Clerk	do.
Residence, Roundhay, Leeds	Mr. Walker	W. Carby Hall, Archt. Park-row, Leeds	do.
Shop, Rolle-street, Exmouth		W. J. Morley, Archt. 269, Swan-arcade, Bradford	do.
Additions to Albert Memorial Schools, Weston-super-Mare		S. J. Wilde, Archt. Boulevard-chambers	do.
*Repairs to Cable Tramway		The Exploiters & Investors Trust, Lim. 54, Old Broad-street, E.C.	do.
Factory and Houses, Great Horton, near Bradford		S. Jackson & Sons, Archts. Tanfield-chmbrs, Bradford	Jan. 13
Chapel and School, Bradley, near Keighley		J. Hartley, Archt. Exchange-bldgs, Skipton	do.
House and Shop, Queen-street, Morley, Yorks.		G. B. Clegg, Archt. 2, Peel-street	do.
Additions to School, Stokesby, Norfolk	E. Marshall Stokesby-with-Herringby Sch. Bd.	A. S. Hewitt, Archt. 10, Regent-street, Yarmouth	do.
Dairy Factory, New Park, Effin, Ireland	G. Jackson	P. Lynch, Charleville, Cork	do.
Street Works, Northumberland-road, &c. near Manchester	Stretford D.C.	Mr. Royle, Surv. Council Offices, Old Trafford	do.
Cottage	Cork Union	J. Cotter, Board Room, Workhouse	Jan. 14
Kerbing, Channelling, &c. Craven Arms, Salop		A. H. Ashdown, Uppington, Wellington, Salop	do.
Stables and Coachhouse, Morley, street, Bradford, Yorks		Empsall & Clarkson, Archts. 7, Exchange, Bradford	do.
House, Canford Cliffs, Bournemouth		Pinder & Fogerty, Archts. 2, St. Peter's-terrace, Bournemouth	Jan. 15
Chapel and School, Boulderclough, Sowerby, Yorks		Sutcliffe & Sutcliffe, Archts. Todmorden	do.
Alterations to "Gonvena," Wadebridge, Cornwall		Major Becher, "Gonvena," Wadebridge	Jan. 16
Additions to Schools	Mexborough (Yorks) School Board	H. J. C. Reed, High-street, Mexborough	do.
Drainage Works, Rhodes Farm, Outwood	Bolton Corporation	Hinnell & Murphy, C.E. 41, Corporation-street, Manchester	do.
Schools, Carbrook-street	Paisley (N.B.) Sch. Bd.	C. Davidson, Archt. Terrace-buildings, Paisley	do.
Street Works (35 streets)	Lancaster Corp.	Boro' Surv. Market-sq.	do.
Sewering, Paving, &c.	Levenshulme (Yorks.) U.D.C.	J. Jepson, 9a, Union-road, Stockport	do.
Alterations to Laundry at Workhouse, Stratton-st. Margaret, Wilts	Highworth & Swindon Union	W. H. Read, Archt. Corn Exchange, Swindon	Jan. 18
Waterworks, Rathmullan, Ireland	Milford Union	M'Laughlin & Conroy, Engrs. 14, Clooney-terr. Londonderry	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Drainage Works, Dapdune-lane	Guildford T.C.	C. G. Mason, Boro' Surv.	Jan. 18
Gasholder Tank in Brickwork	Cowes (I.W.) Gas Co.	C. Woodall, Engr. Palace-chambers, Westminster	do.
*Gravel and Shell	London County Council	Parks Dept. 9, Spring-gardens, S.W.	do.
*Supply of Road Materials	Com. of H.M. Works	12, Whitehall-place, S.W.	Jan. 19
*Two Iron Staircases	Paddington Union	F. J. Smith, 17a, Gt. George-st. S.W.	do.
*Making-up Roads	Tottenham D.C.	P. E. Murphy, Engr. at Council Offices	do.
*Broken Granite	Shoeburyness U.D.C.	J. W. Harris, Surv. Shoeburyness	do.
Sewer Extension, Blessington-road	Lee (Kent) B. of W.	G. Whale, Chief Offices, Old Charlton	Jan. 20
*Tar and Granite Paving and Iron Fencing	Met. Asylums Board	Norfolk House, Norfolk-street, W.C.	Jan. 21
Engine House and Weaving Shed, Skelmanthorpe, Yorks.		J. Kirk & Sons, Archts. Huddersfield	do.
Sewers, Pumping Station, &c.	Porthcawl U.D.C.	E. T. David, Council Offices, Bridgend	Jan. 20
Flags, Kerbs, and Setts (Haslingden Stone)	Bury (Lancs.) Corp.	J. Cartwright, C.E. Boro' Engineer	do.
*Making-up, &c. Roads	Hornsey U.D.C.	E. J. Lovegrove, Offices, Southwood-lane, Highgate	Jan. 25
*Stoneware Pipe Sewer	London C.C.	Engineer's Dept. Spring-gardens, S.W.	Jan. 28
*Block of Dwellings	do.	Architect's Dept. 17, Pall Mall East, S.W.	do.
*Fire Station, N. Woolwich	do.	Architect's Dept. 21, Whitehall-place, S.W.	do.
Granite and Slag	Brigg (Lincs.) R.D.C.	F. C. Hett, Council Offices	do.
*Enlargement, Sorting Office, Colchester Post Office	Com. of H.M. Works	The Secretary, H.M. Office of Works	do.
*Alterations, Runcorn Police Station	Cheshire C.C.	H. Beswick, 17, Newgate-street, Chester	Jan. 27
Sewerage Works, Cheadle Heath Farm	Stockport Corp.	M. A. Fowler, C.E. 1, St. Peter's-sq. Manchester	Feb. 1
*Construction Arabic Museum and Library, Cairo	Egyptian Government	Ministry of Public Works, Cairo	do.
Additions to Gill Pier, Westray	Orkney Harbours Commrs.	Robertson & Sinclair, Kirkwall	Feb. 6
Rebuilding No. 1, Adam-st. Cardiff	W. J. Rogers, Ltd.	Jones & Co. Archt. St. Mary-st. Cardiff	No date
Two Houses, Creffield-rd. Colchester.		Baker & May, Archt. Head-st. Colchester	do.
House and Stabling, Lightcliffe, Halifax		J. F. Walsh, Archt. Bank-chambers, Halifax	do.
Four Shops, &c. Port Talbot, Wales		Margrave & Peacock, Archt. 46, Wind-st. Swansea	do.
Two Shops and Additions to Hockley Chapel, Nottingham		H. Harper, 8, Beastmarket-hill	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Manager, Works' Department	London County Council	1,500l. per annum	Jan. 14
*Borough Engineer's Assistant	Leicester Corporation	2l. 2s. per week	Jan. 18

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv. vi. *& viii. Public Appointments, pp.* xvi. *& xix.*

under Pierrefitte, is being actively carried on.——The municipality of Châlons-sur-Marne have just decided to suppress the Chapel belonging to the College, which from its size and decoration constitutes one of the finest ornaments of the town. This chapel dates from the seventeenth century.——The works undertaken by M. Formigé for the restoration of the Théâtre at Orange have now been nearly completed. The vaults supporting the ranges of seats to right and left of the scene have been rebuilt.——An interesting exhibition of archæological objects and documents relating to the primitive races of America, will shortly be held at the Trocadéro.——There is a question of placing in the Council Hall of the Tribunal de Commerce the beautiful marble bas-relief by M. Puech, "La Seine," which was exhibited a few years ago at the Champs Elysées.——Some measures are soon to be taken by the Municipality of Saint Maudé to put into some sort of repair an old tower which is situated at the angle of the Grande Rue de Paris. It is considered one of the last vestiges of the park of Philippe Auguste.——The death of M. Aumont, architect, in Paris, is announced.——A distinguished architect, M. Ludovic Douillard, has just died at Nantes, at the age of seventy-three years. He belonged to the Société Centrale since 1873, and had founded an atelier for young architects. M. Douillard, who was a Catholic priest, built the church of Paimbœuff, that of Plandieu, near Vannes, and the Convent of the Capucins at Nantes. It is a monument of a pure and harmonious style, remarkable for its cloisters.——There is a talk of erecting a statue to the artist Troyon in one of the public squares of Sevres.

GERMANY.—The architectural journals are much occupied at the present moment with a controversy as to the fairness of public building officials entering into open competition against architects in private practice. At present it is permissible, and a common occurrence, but it appears that the private architects would prefer to see some limitation.——The "Vereinigung Berliner Architekten," under the presidency of Herr von der Hude, has held a special meeting in honour of the three architects of the Berlin Industrial Exhibition of last year—Messrs. Griesebach, Hoffacker, and Schmitz. The subject of the lecture for the evening was "Exhibition Buildings," by Herr Kyllmann, who gave much valuable information as to former exhibitions.——In connexion with the difficulties in obtaining a suitable design for a monument to the Ex-Chancellor Bismarck, at Berlin, we understand that a limited competition has now been opened for the ten candidates in the open competition of 1895 whose work was considered the best.——In the course of the present year considerable works are to be carried out in connexion with the new Botanical Gardens at Leipzig, bearing the name of the "Palmengarten." Premiums have been offered in competition for the necessary designs, and the scheme will be decided on in the course of a month. The premiums offered are very large as compared with the amount of work required from the competitors. The cost of the work will amount to at least 50,000*l.*——In the competition which has been held at Leipzig for the design of a National Monument, as a memorial of the battle of Leipzig, the premiums have now been awarded, the first, of the value of 300*l.*, being given to an architect—Herr Wilhelm Kreis, of Charlottenburg; the second premium was given to another architect—Herr Otto Rieth, of Berlin; and of other premiums the fourth was given to Professor Bruno Schmitz. There were sixty-eight candidates, and the average merit of the contributions was exceedingly high.——The Dortmund-Ems canal has made rapid progress during 1896, the expenditure up to this time being about 2,600,000*l.* A great deal of the soil has already been moved, though there are still fully 2,000,000 cubic mètres to be dug. All the brickwork for the twenty locks is well in hand; also the embankments for the harbour at either end.——Thirty designs were sent in for the Stübbel monument at Dresden, and the first premium has been given to Messrs. Schilling & Graebner, architects.——In the course of 1897 the Municipality of Dresden proposes erecting a monument to the present King—Albert of Saxony—on the twenty-fifth anniversary of his reign, and a competition has been opened with a view to obtaining a suitable design, the premiums amounting to 600*l.* A very influential committee, including Professor Wallot, will act as assessors, and the competition will be decided during May.

DURBAN.—The Durban Corporation Building Committee passed forty-two plans for the week ending December 7, including new premises for the South African Mutual Assurance Society, to cost from twenty-five to thirty thousand pounds. Arab merchants are also building warehouses. All new buildings are of a substantial character, wood and iron being nearly wholly discarded.—*Johannesburg Standard.*

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Charles Barry, architect, is removing at Lady-day from his offices at the Westminster Chambers, Victoria-street, to Parliament Mansions, Victoria-street. He has taken into partnership his eldest son, Mr. Charles Edward Barry, and the new firm will be "Messrs. Charles Barry & Son."——Messrs. Leopold & Co. have opened Japanese paperhanging show-rooms at 24, Cecilcourt, Charing Cross-road.

APPOINTMENT.—Mr. E. B. Newton, of the City Surveyor's office, Carlisle, has been selected out of a large number of candidates for the appointment of Engineering Assistant to the Borough Engineer of Rochdale. Mr. Newton served his articles with the late Surveyor of Carlisle, Mr. W. Howard-Smith.

THE DIVINING ROD AT FAULT.—A difficulty having arisen with regard to the supply of water at Grandborough, the Rugby Rural District Council, at the request of the village authorities, called in the services of a water-finder, who visited the place a short time ago, and indicated several spots where water might be found. At the meeting of the District Council recently, it was stated that a well-sinker had sunk a well at one of the spots where water was said to be obtainable at a depth of 25 ft., and although he had bored to a further depth of 25 ft., making 50 ft. altogether, no water had been found. It was suggested that the diviner should be asked to return the fees paid to him, but it was eventually decided to test another place before doing so.—*Birmingham Gazette.*

NATIONAL GALLERY OF BRITISH ART.—We are asked to state that the Portland stone used in this building was specially selected from the quarries of Mr. F. J. Barnes, Isle of Portland; and that the whole of the wrought-iron sashes and steel doors were made by Mr. Joseph Stone, of St. George's-road, Southwark, S.E.

THE WORKING MEN'S COLLEGE, GREAT ORMOND-STREET, LONDON.—An appeal is made for funds wherewith to erect, at an estimated cost of 7,000*l.*, new buildings for the Working Men's College, which was established in 1854 by the exertions of F. D. Maurice, Thomas Hughes, J. M. Ludlow, and others. The present premises, No. 46, Great Ormond-street, have proved too small, and a laboratory and a gymnasium are much desired. It is calculated that a further sum of 8,000*l.* is needed for the equipment and maintenance of more efficient buildings. The house, now numbered "46," remarkable for its handsome main staircase, has been identified with that occupied by Lord Chancellor Thurlow in 1784, when, on the night of March 24, thieves entered from over the garden-wall and carried off the Great Seal. It is commonly stated that the loss occasioned a long delay in the issue of documents until a new seal was made; but Thomas Major, engraver to the Court, and Stamp Office, then living at No. 5, Tavistock-row, Covent Garden, supplied within twenty hours a perfect

substitute in brass of the Great Seal. Major then made one of silver, which continued in use until the union with Ireland.

AN OLD-ESTABLISHED FIRM.—To celebrate the completion of the 150th year of the firm's existence, Messrs. Joseph Chater & Sons, glass, lead, oil, and colour merchants, of St. Dunstan's Hill, London, entertained their staff on the 2nd inst. at the "City Arms," St. Mary-axe, when about fifty sat down to dinner. During the subsequent proceedings the toast of "Prosperity to the Firm" was proposed by Mr. Humphreys, who has been in the firm's employment for upwards of forty years, and the partners, Messrs. Leathley Chater & F. Clive Chater, were presented with two silver cigar-boxes, subscribed for by the whole of the staff, the lids being engraved with the dates 1746-1896, as a memento of the occasion.

THE PRESERVATION OF GREENBANK, SEFTON PARK, LIVERPOOL.—Subject to approval by the City Council, the Finance Committee have entered into an agreement with Mr. Herbert Rathbone with the object of preserving, for the purposes of public recreation, an extensive piece of land, containing about 90,000 square yards, situate between Sefton Park and Greenbank-road. This estate, which contains a large and picturesque mere of natural formation, has been purchased for building purposes by Messrs. David Roberts & Son, but as the erection upon it of rows of houses of the ordinary type would not only ruin the beauty of the district, but seriously depreciate the property of the Corporation leaseholders who have built villas on that side of Sefton Park, the Finance Committee have agreed that if Mr. Rathbone purchases the property from Messrs. Roberts for 17,000*l.*, the Corporation will repurchase it from him for 13,000*l.* upon the condition that whilst they shall have power to lease the frontage to Greenbank-road as sites for houses of a superior class, they shall maintain the lake and surrounding land for the use of the public, and make a public access to it from Sefton Park and Greenbank-road also. At present the estate is leased to Mr. John Brancker, who is to remain in possession during his lifetime.—*Liverpool Post.*

THE PLUMBERS' COMPANY AND EX-BAILIE CRAWFORD.—In accordance with a resolution passed by the Court, the Freedom and Livery of the Plumbers' Company were on Tuesday, last week, conferred at the quarterly Court, held at the Guildhall, on ex-Bailie Crawford, late Chairman of the Health Committee of Glasgow. The resolution which was read by the Clerk, set out that the honour was conferred on Mr. Crawford "in recognition of his timely aid and eminent encouragement of the movement for the national registration of plumbers by personal efforts and official influence, securing the alliance of the representatives of the health and educational authorities and plumbers of the locality, with the District Council for Glasgow and the West of Scotland, and the active co-operation of that body and others in promoting the higher technical training of plumbers, and the certification of qualified men in the interests of the public health." Mr. Philip Wilkinson, Master of the Company, presided, and spoke of the useful work which Mr. Crawford had done as Chairman of the Health Committee of Glasgow. Mr. Charles Hudson, Alderman Sir Stuart Knill, and Mr. W. H. Bishop, also bore testimony to Mr. Crawford's valuable services to the cause of sanitation. The customary oath having been administered by the Clerk, Mr. Crawford was formally admitted by the Master as a freeman and liveryman of the Plumbers' Company. In thanking the Court for the honour conferred upon him, Mr. Crawford referred to the progress made in sanitary matters during the past few years as being largely due to the work of the Plumbers' Company. Their efforts to impart technical instruction to plumbers had necessarily been of advantage to the community as a whole. He believed every householder was now beginning to realise that it was his business to ascertain that the plumber he employed was a registered man. The freedom of the Company was afterwards conferred on Mr. E. R. Collins (Sanitary Inspector to the Camberwell Vestry) and Mr. W. Moss (of Manchester), they having become entitled to it through having passed the examinations in practical workmanship and knowledge of plumbing prescribed by the Company. The Court afterwards entertained ex-Bailie Crawford and the other honorary freemen, and the London Registration Committee to dinner at the Guildhall.

ELECTRIC LIGHT, SOUTH SHIELDS.—Major-General Croz'er, R.E., an inspector of the Local Government Board, recently held an inquiry in the Town Hall, South Shields, into an application of the Corporation to borrow the sum of 7,500*l.* for the purpose of extending the electric-lighting works. Amongst those present were the Town Clerk (Mr. J. Moore Hayton) and the electrical engineer (Mr. J. A. Jeckell). The Town Clerk stated that the electricity works, which were in the hands of the Corporation, were opened in September last, and so successful had they been, and so well had the light been taken up, that the capacity of the station was now taxed to its utmost extent.

THE NEW GENERAL HOSPITAL, BIRMINGHAM.—The new General Hospital, Birmingham, is expected to be ready for opening in June. Certain branches of the work in connexion with the new building have already been completed, and as the number of men employed there will now begin to diminish from week to week, Mr. J. C. Holder (the chairman of the New General Hospital Building Committee) took advantage of Saturday last to give a dinner to the workmen before any of them were moved to other jobs. The dinner took place in the evening at the Masonic Hall, New-street, and as many as 401 workmen of various grades were present. Mr. Holder presided. The Chairman proposed "Success to the New General Hospital Building," Mr. W. Henman (the architect) and Mr. T. Barnsley (the builder) responding. Mr. J. B. Clarke next proposed "The Workmen," and said they had engaged on the work 70 carpenters, 40 bricklayers, 20 plumbers and painters, 110 labourers, 90 plasterers, 11 were working in connexion with the electric-light installation, 3 with the telephone, 10 laying down asphalte, 12 glaziers, 12 masons, 10 tilers, 4 well-sinkers, 6 working in connexion with the ventilation, and 4 slaters. Mr. Berrill (for the carpenters), Mr. Randel (for the bricklayers), and Mr. Roddy (for the plasterers) responded. Other toasts followed.

CAPITAL AND LABOUR.

COVENTRY BUILDING TRADE: DEMANDS FOR RISE IN WAGES.—Some months ago, when the building trade was at its height, a demand was made by the bricklayers for an increase in wages, but the request was refused by the employers. The workmen remained at their posts, but intimated that at the proper time—December 31—a general application would be made. This has now been done, and the bricklayers have asked for an advance in wages from 8d. to 9d. an hour, to come into force on April 1. In addition to this the Operative Bricklayers' Society have framed a new code of rules, which they ask shall be substituted for those now in operation. If accepted, they will have the effect of reducing the hours of labour by two and a half hours a week, the payment of overtime after 5 30 p.m. instead of 8 p.m. as hitherto, and limiting the number of apprentices (who shall be bound by the age of 16 for at least five years) employed by any firm to two. The bricklayers are not the only workmen desiring to profit by the present trade activity—similar applications have been received from the different societies of carpenters and joiners, masons, plasterers, scaffolders, labourers, &c. It may be said that, with the exception of the painters, the demand for increased wages is general among the building trade employees throughout the city. The carpenters and joiners ask for a minimum rate of wages of 9d. an hour and likewise submit a new code of rules. The masons demand an increase from 8d. to 9d., fixers to be paid 8½d. The operative plasterers ask for an increase from 8d. to 9d., bricklayers' labourers from 5½d. to 6d., and scaffolders and plasterers' labourers from 5½d. to 6½d. The alterations of rules proposed by the workmen are of considerable importance on account of the extraordinary state of trade and the number of employees affected. At the present time there are nearly 5,000 men working in Coventry in different branches, and the coming year promises little slack time for builders. A meeting of the Master Builders' Association is to be held shortly to consider the demands of the employees.

SWANSEA PLUMBERS AND THEIR WAGES.—A meeting of Swansea builders has been held to consider the demands of the plumbers for an increase of wages. Eventually the meeting decided to agree to pay the men 8d. per hour all the year round, instead of 7½d. as at present; but not to accede to the request to pay a minimum of 36s. for the 48 hours per week worked in the winter.

MEETINGS.

SUNDAY, JANUARY 10.

Sunday Lecture Society.—Professor Vivian B. Lewes on "Artificial Light." 4 p.m.

MONDAY, JANUARY 11.

Royal Institute of British Architects.—Business meeting and election of new members. 8 p.m.

Surveyors' Institution.—Mr. Howard Martin on "The Future Development of 'The Surveyors' Institution.'" 8 p.m.

Clerks of Works' Association (Carpenters' Hall).—Paper by Mr. H. W. Handcock. 7.30 p.m.

Liverpool Architectural Society.—Mr. C. E. Mumford on "Belgian Churches," illustrated with limelight.

TUESDAY, JANUARY 12.

Institution of Civil Engineers.—Professor W. Ripper on "Superheated-Steam Engine Trials." 8 p.m.

Society of Biblical Archæology.—Anniversary Meeting. 8 p.m.

Carlisle Architectural, Engineering, and Surveying Society.—Mr. F. J. Nickols on "Disposal of House Refuse."

WEDNESDAY, JANUARY 13.

Northern Architectural Association.—Mr. W. H. Allen on "Fireclay Manufactures." 7.30 p.m.

THURSDAY, JANUARY 14.

Society of Antiquaries.—Ballot for the election of Fellows. 8.30 p.m.

Institution of Electrical Engineers.—Inaugural Address of the President, Sir Henry Mance. 8 p.m.

FRIDAY, JANUARY 15.

Architectural Association.—Mr. E. Prioleau Warren on "Decorative Plaster Work," with models. 7.30 p.m.

Institution of Civil Engineers.—Students' Meeting. Mr. Walter Beer on "'Monier' Girders and Arches." 8 p.m.

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	£ 8/0/0 — 9/0/0
Teak, E I....load		11/0/0 — 16/0/0
Sequoia, U.S.ft.cu		s/o — 2/1
Ash, Canada load		2/10/0 — 3/15/0
Birch, do.		3/10/0 — 5/5/0
Elm, do.....		3/5/0 — 4/10/0
Fir, Dantsic, &c..		2/10/0 — 4/10/0
Oak, do.....		2/10/0 — 3/10/0
Canada		4/15/0 — 5/15/0
Pine, Canada red		0/0/0 — 0/0/0
Do. Yellow		2/0/0 — 4/0/0
Lath, Dantsic, fath		4/10/0 — 5/10/0
St. Petersburg..		5/0/0 — 8/10/0
Wainscot, Riga, &c., log		2/10/0 — 4/15/0
Odessa, crown....		2/10/0 — 4/15/0
Deals, Finland		
2nd & 1st std 100		8/10/0 — 9/0/0
Do. 4th & 3rd...		8/10/0 — 9/0/0
Do. Riga		7/0/0 — 8/0/0
St. Petersburg, 1st yellow... .		10/10/0 — 13/0/0
Do. 2nd yellow		9/10/0 — 10/10/0
Do. white		9/0/0 — 11/0/0
Swedish		8/10/0 — 16/0/0
White Sea.....		10/0/0 — 16/10/0
Canada, Pine 1st		21/0/0 — 23/10/0
Do. do. 2nd		15/0/0 — 17/0/0
Do. do. 3rd, &c.		7/10/0 — 11/0/0
Do. Spruce, 1st.		9/0/0 — 10/10/0
Do. do. 3rd and 2nd		9/0/0 — 10/0/0
New Brunswick		7/5/0 — 7/15/0
Battens, all kinds		5/0/0 — 20/0/0
Flooring boards, sq , 1 in. prep.		
1st		0/9/6 — 0/16/6
Do. 2nd		0/8/0 — 0/13/0
Other qualities—		0/6/0 — 0/7/6
Cedar, Cuba, ft.		/4½ — /5
Honduras, &c.		/4 — /5
Mahogany, Cuba		/4½ — /6
St. Domingo, cargo av.		/4½ — 1/3
Mexican, do. do.		/4 — /5
Tobasco, do. do.		/5 — /7
Honduras, do.		/5 — /6½
Box, Turkey, ton		4/0/0 — 15/0/0
Rose, Rio.....		7/0/0 — 28/0/0
Bahia		6/0/0 — 25/0/0
Satin, St. Doming.		0/0/7 — 0/1/0

TIMBER *(continued).*		
Satin, Porto Rico		0/0/7 — 0/1/6
Walnut, Italian ..		0/0/3 — 0/0/7
METALS.		
Iron—Pig, in Scotland .....ton		2/8/1½ — 0/0/0
Bar, Welsh, in London		5/15/0 — 5/17/6
Do. do. at works in Wales		5/10/0 — 5/12/6
Do. Staffordshire, in London.....		5/15/0 — 6/10/0
COPPER—British cake and ingot		53/0/0 — 53/10/0
Best selected ..		54/0/0 — 54/10/0
Sheets, strong..		62/15/0 — 63/10/0
Chili bars		49/10/0 — 0/0/0
YELLOW MTL lb.		0/0/5 — 0/0/5½
LEAD—Pig, Spanish ...ton		11/12/6 — 11/13/9
English com. brands		11/15/0 — 11/17/6
Sheet, English 6 lbs. per sq. ft. and upwards ..		12/10/0 — 0/0/0
Pipe.....		13/0/0 — 0/0/0
ZINC—English sheet.....ton..		20/10/0 — 0/0/0
Vieille Montagne		21/10/0 — 0/0/0
Spelter		18/0/0 — 18/2/6
TIN—Straits		58/13/9 — 0/0/0
Australian.....		60/7/6 — 0/0/0
English Ingots..		62/15/0 — 63/10/0
Banca.....		61/0/0 — 0/0/0
Billiton		59/15/0 — 60/0/0
OILS.		
Linseed .....ton		15/12/6 — 0/0/0
Cocoanut, Cochin		28/0/0 — 0/0/0
Do. Ceylon		24/0/0 — 0/0/0
Palm, Lagos.....		24/10/0 — 0/0/0
Rapeseed, English pale		27/10/0 — 28/0/0
Do. Brown		27/0/0 — 27/10/0
Cottonseed ref. ..		15/17/6 — 16/10/0
Oleine.....		18/10/0 — 19/10/0
Lubricating U.S.		0/6/3 — 0/7/6
Do. black		0/4/9 — 0/6/6
TAR—Stockholm	barrel	22/0 — 0/0/0
Archangel.....		0/12/6 — 0/0/0
Turpentine....ton		22/15/0 — 23/17/6

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender: and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

BURNLEY.—For the construction of a subway beneath the Leeds and Liverpool Canal, for the Corporation:—

J. Simpson	£1,707 18 0	S. Taylor	£1,318 2 6
J. Wadge	1,347 15 0	Smith Bros., Burnley (accepted)	1,227 5 0
J. & J. Lee	1,329 5 0		

DAVENTRY.—For additions, &c., to police-station, for the Northamptonshire County Council. Mr. E. Law, County Surveyor, Northampton. Quantities by architect:—

J. Neal	£397	J. T. Wingrove, Northampton (accepted)	£397

FENNY STRATFORD (Bucks).—For the erection of school buildings, for the School Board. Mr. John Chadwick, architect, Fenny Stratford. Quantities by the architect:—

Manns & Sons.....	£5,717 2 5	Thos. Yerrell	£3,495 0 0
Wm. Wade	3,968 0 0	Thos. Hy. Coleman	3,424 0 0
S. Grist, Ltd.	3,788 0 0	Slaymaker & Harlow Northampton*....	3,687 16 4
H. A. Williams	3,690 0 0		
G. E. Fathers	3,632 19 3		

* Accepted, subject to approval of Education Department.

GALWAY.—For the erection of school buildings in convent grounds, Taylor's Hill, for the nuns of the Dominican Convent. Mr. Jas. Perry, C.E., County Surveyor's Office, Galway:—

Lydon	£10,116 10 5	T. Griffin	£8 500 0 0
Ryan	9,324 0 0	J. Costello, Galway*	8,653 0 0
Emerson	9,260 0 0		

* Accepted.

LEAMINGTON.—For the execution of street works, for the Corporation. Mr. De Normanville, Engineer, Town Hall, Leamington:—

Jacob Biggs	£7,272 0 0	Richard Bowen, Tavistock-street, Leamington*....	£5,006 15 2
Currall, Lewis, & Martin	6,567 0 0		
Geo. Bell	5,429 0 0		

* Accepted.

LEIGHTON BUZZARD.—For drainage and water supply works, at the "White House," Leighton Buzzard. Mr. T. H. Bishop, architect, Leighton Buzzard:—

Drainage.

Dawson	£215 0	Cook & Son	£200 1
Tutt	208 5	Garside & Son*	195 1

Water Supply.

Butcher.....	£117 3 3	Spiers*.....	£75 8 9

* Accepted.

LINSLADE (Bucks).—For the erection of a detached house in Stoke-road, Linslade, Leighton Buzzard. Mr. T. H. Bishop, architect, Leighton Buzzard:—

Cook & Son	£888 0	Dawson*.....	£797 10
Yirrell	830 0		

* Accepted.

LONDON.—For alterations and fittings at the "White Hart," 50, High-street, Whitechapel. Messrs. Boun & Sons, architects, Shoreditch:—

E. Lancaster	£445	Walter Boun & Co.*	£328
C. M. Henry	439	J. P. Groome	325
J. Valantine.....	379		

* Accepted.

LONDON.—For building a Baptist School, Queen's Park, Kilburn, W. Mr. George Baines, architect, 5, Clement's-inn, Strand, W.C.:—

	Main School.	Infants' School.	Offices.	Total.
	£.	£.	£.	£. s.
Stebbings & Pannett	1,200	375 0	135	1,710 0
Leng, Thomas D	1,214	371 0	112	1,697 0
Chesshum, J., & Sons.....	1,072	321 0	108	1,501 0
Cowley & Drake	1,045	345 0	105	1,495 0
Chinchen, F. T.	1,030	314 10	100	1,444 10
Bendon, Thos.	1,018	305 0	95	1,418 0
Willmott, J., & Sons	980	315 0	110	1,405 0
Cridlan, E. J., & Co.	976	329 0	97	1,402 0
Battley, Sons, & Holness ..	974	296 0	96	1,366 0
Summer, W., & Co., Ltd., 4, Blackburn-road, W. Hampstead (accepted) ..	930	288 0	104	1,322 0

LONDON.—Accepted for alterations and fittings at No. 124 Southwark-street, for Mr. G. H. Richards:—
John Appleby, Cornwall-road, S.E. £185
(No competition.)

LONDON.—Accepted for constructing fireproof strong rooms, water closets and lavatories, at Suffolk-lane, Cannon-street, for Messrs. Jas. Truscott & Son. Mr. G. Gordon Stanham, architect, 100B, Queen Victoria-street:—
John Appleby, Cornwall-road, S.E. £320

LONDON.—For rebuilding the Royal Cambridge Music-hall, Commercial-street, Shoreditch, E., for the Consolidated Contract Corporation, Limited. Mr. Harry Percival, architect, 22, Buckingham-street, Adelphi, W.C.:—

Kirk & Randall	£27,669	W. Wallis	£20,490
Lascelles	21,972	Patman & Fotheringham	20,451
Johnson & Co.	21,764	Killby & Gayford	22,321
McCarthy Fitt	21,730	Windebank & Co.	20,170
M. Patrick	21,650	Beer & Gash	19 930
Leslie & Co.	21,597	Wimpey & Co.	19,636
Laing	21,466	Dearing & Son	19,460
Holloway	20,940	S. R. Lamble*	19,239

* Revised and accepted.

LONDON.—For proposed new laundry and conversion of premises into sale rooms at the St. Mary's Day Nursery, Plaistow, E., for Miss T. Given Wilson. Messrs. Newman & Jacques, architects, 2, Fen-court, E.C.:—

	New Laundry.	New Sale Rooms.
Battley, Sons, & Holness	£897	—
Hosking	873	£285
Gregar & Son	850	249
Hearle & Farrow	834	240

LONDON.—For alterations to 89, High-street, Whitechapel. Messrs. Brown & Son, architects, 101, Commercial-street, Shoreditch, for Mr. Heathman, proprietor:—

N. Lancaster	£445 0	P. Bond & Co.	£328 10
W. Henry	439 10	J. P. Groome	325 0
Valentine	379 0		

MAIDSTONE.—For the execution of road works, &c., Charles-street, for the Urban District Council. Mr. T. F. Bunting, Borough Surveyor, Fair Meadow, Maidstone:—
W. J. Logan £157
J. H. Bridge, Maidstone (accepted) 150

MANCHESTER.—For sewering, kerbing, &c., Lacy-street, Stretford. Mr. J. Bowden, surveyor, 14, Ridgefield, Manchester:—

Thos. Cooper	£825 13 3	R. E. Jones, Patricroft*	£550 0 0
Etheridge & Clark	707 0 0		
Geo. Boyson	675 0 0		

* Accepted.

NEWPORT (I.W.).—For erecting imbecile and receiving wards at the Union Workhouse, Parkhurst, for the Isle of Wight Board of Guardians. Mr. John I. Barton, C.E., architect and surveyor:—

Quinton	£5,891 15 0	Barton	£5,150 0 0
Jolliffe	5,450 0 0	Jenkins	4,959 0 0
Jenkins & Son	5,223 0 0	Meader	4,907 0 0
Barton Bros.	5,220 2 6	G. Hayles, Shanklin*	4,890 0 0
Day	5,173 0 0		

* Accepted.
[Architect's estimate, £5,000.]

SOUTHAMPTON.—For the erection of store premises, Town Quay, for the Harbour Board. Mr. E. Cooper Poole, surveyor, 4, Portland-street, Southampton:—

W. J. Chinchen	£3,550	Dyer & Sons	£2,638
H. W. Bull	3,325	F. Usman	2,618
T. Rashley	2,985	Roe & Grace, Southampton (accepted)	2,500
Jenkins & Sons	2,845		

[Surveyor's protecting estimate, £2,730. 10s.]

SOUTHEND-ON-SEA.—For the erection of a pair of villa residences on the West Cliff Parade, for Mr. J. Kerry. Mr. Frank E. Smee, architect and surveyor, 12, West Smithfield, E.C.:—
F. Dupont, Southend (amended estimate accepted) .. £2,097

RETFORD.—For the erection of a malting, for Messrs. Walker & Homfray, Ltd. Mr. Richard Hardy, architect, Bentinck Buildings, Wheelergate, Nottingham:—

John Wilson	£7,060 0 0	Mackenzie & Son	£6,270 0 0
Preston & Hirst	6,991 0 0	W. Smith	6,269 0 0
F. Messom	6,678 0 0	Geo. Hurst	6,235 0 0
C. Jones	6,650 0 0	Brown & Son	6,220 0 0
E. Rigley	6,630 12 6	Geo. Fenton	6,168 0 0
C. Baines	6,495 0 0	F. Pattinson	6,154 12 7
T. Lowe & Sons	6,400 0 0	J. H. Vickers, Nottingham*	5,990 0 0
H. Vickers	6,350 0 0		

*Accepted.

WHITCHURCH (Tavistock).—Accepted for building four houses on the Chollacott Estate, plumbing, glazing, and painting excepted. Mr. B. Priestley Shires, architect, Central Exchange, Plymouth:—
W. H. Higman, Tavistock £1,450

SUBSCRIBERS in LONDON and the SUBURBS, (by prepaying at the Publishing Office, 19s. per annum or 4s. 9d. per quarter), can ensure receiving "The Builder," by *Friday Morning's Post*.

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PUBLISHER'S NOTICES.

***Registered Telegraphic Address*, 'THE BUILDER,' LONDON.**

THE INDEX and TITLE-PAGE for VOLUME LXXI. (July to Dec. 1896) are given as a supplement with the present number.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

READING CASES (Cloth), with Strings, price 9d. each, and

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SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 3s. 6d. each.

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Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the Front Page should be in by TWELVE noon on WEDNESDAY.

SPECIAL.—ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before 10 a.m. on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

PERSONS Advertising in "The Builder," may have *Replies addressed to the Office*, 46, Catherine-street, Covent Garden, W.C. *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

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SLATING AND TILING,

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And other description of Slates Ready for immediate delivery to any Railway Station.

Applications for Prices, &c., to
BETHNAL GREEN SLATE WORKS,
BETHNAL GREEN, LONDON, E.

TO CORRESPONDENTS.

L. & H. (too late, next week).

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

THE BATH STONE FIRMS, Ltd.

BATH,
FOR ALL THE PROVED KINDS OF
BATH STONE.
FLUATE, for Hardening, Waterproofing, and Preserving Building Materials.

HAM HILL STONE.
DOULTING STONE.
The Ham Hill and Doulting Stone Co.
(incorporating The Ham Hill Stone Co. and C. Trask & Sons, The Doulting Stone Co.).
Chief Office:—Norton, Stoke-under-Ham, Somerset.
London Agent:—Mr. E. A. Williams, 16, Craven-street, Strand,

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co. [ADVT.

SPRAGUE & CO.,
PHOTOLITHOGRAPHERS,
4 & 5, East Harding-street,
Fetter-lane, E.C. [ADVT.

QUANTITIES, &c., LITHOGRAPHED accurately and with despatch.
METCHIM & SON, 20, Parliament-st. S.W.
"QUANTITY SURVEYORS' TABLES,"
For 1897, price 6d. post 7d. In leather 1/- Post 1/1 [ADVT

THE
French Asphalte
COMPANY,
Suffolk House, Cannon-street, E.C.
SUPPLY THE BEST MATERIAL AND WORKMANSHIP FOR BUILDINGS, DAMP COURSES, AREAS, ROOFS, WASHHOUSE AND DAIRY FLOORS, &c., &c.

This Asphalte was chosen to be laid at Sandringham, on the new General Post Office, and other important buildings.

TWELVE GOLD AND SILVER MEDALS AWARDED.

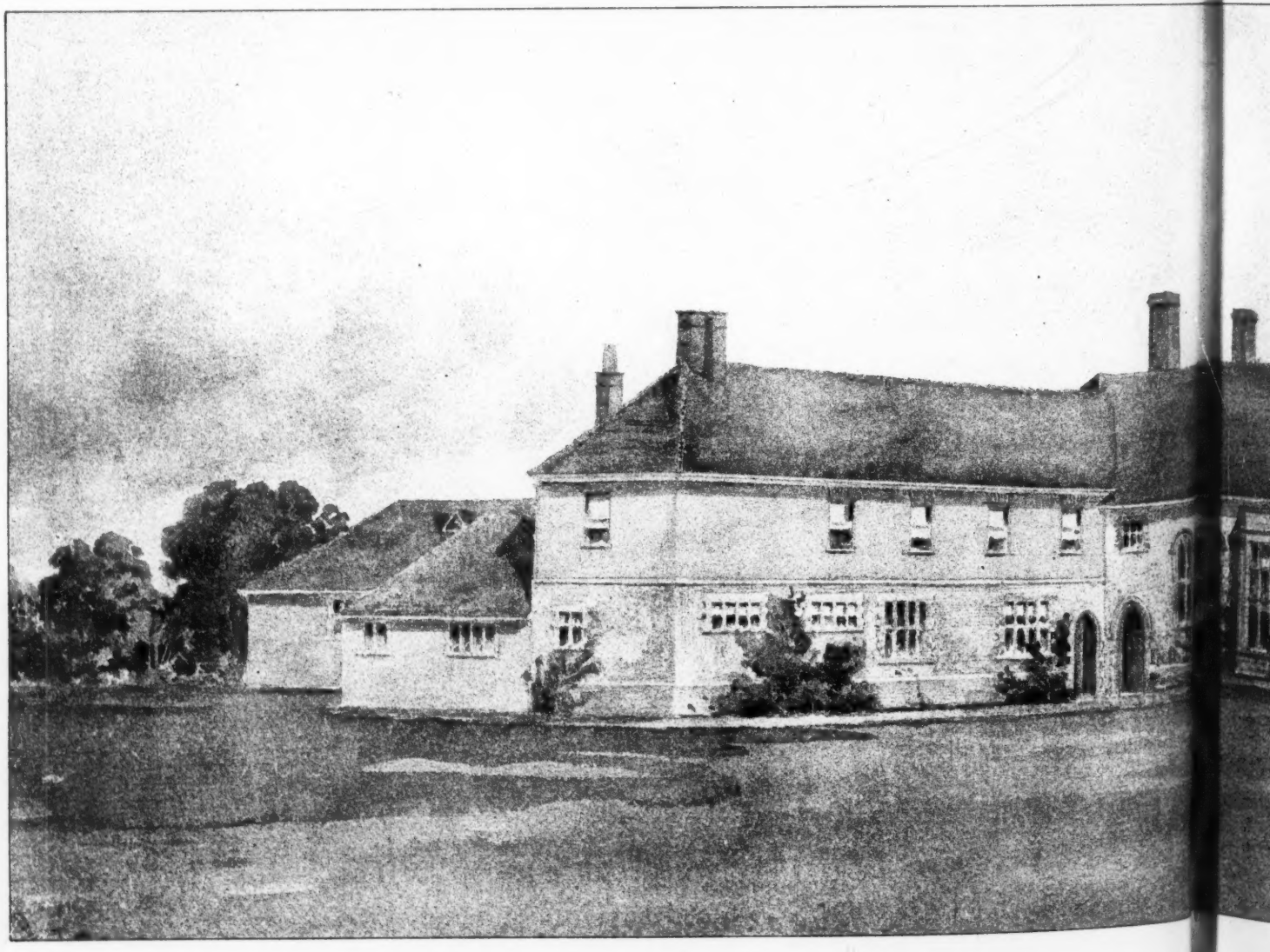
COPPER AND ZINC ROOFING.

F. BRABY & CO.

LONDON. ** LIVERPOOL. ** GLASGOW.

352 to 364, Euston-road, N.W. 6 and 8, Hatton Garden. 47 and 49, St. Enoch-square.

VIEILLE MONTAGNE SOLE MANUFACTURING AGENTS.
NO SOLDER. NO EXTERNAL FASTENINGS.
Particulars on Application. ***Chief Offices: Fitzroy Works, EUSTON ROAD, LONDON, N.W.***



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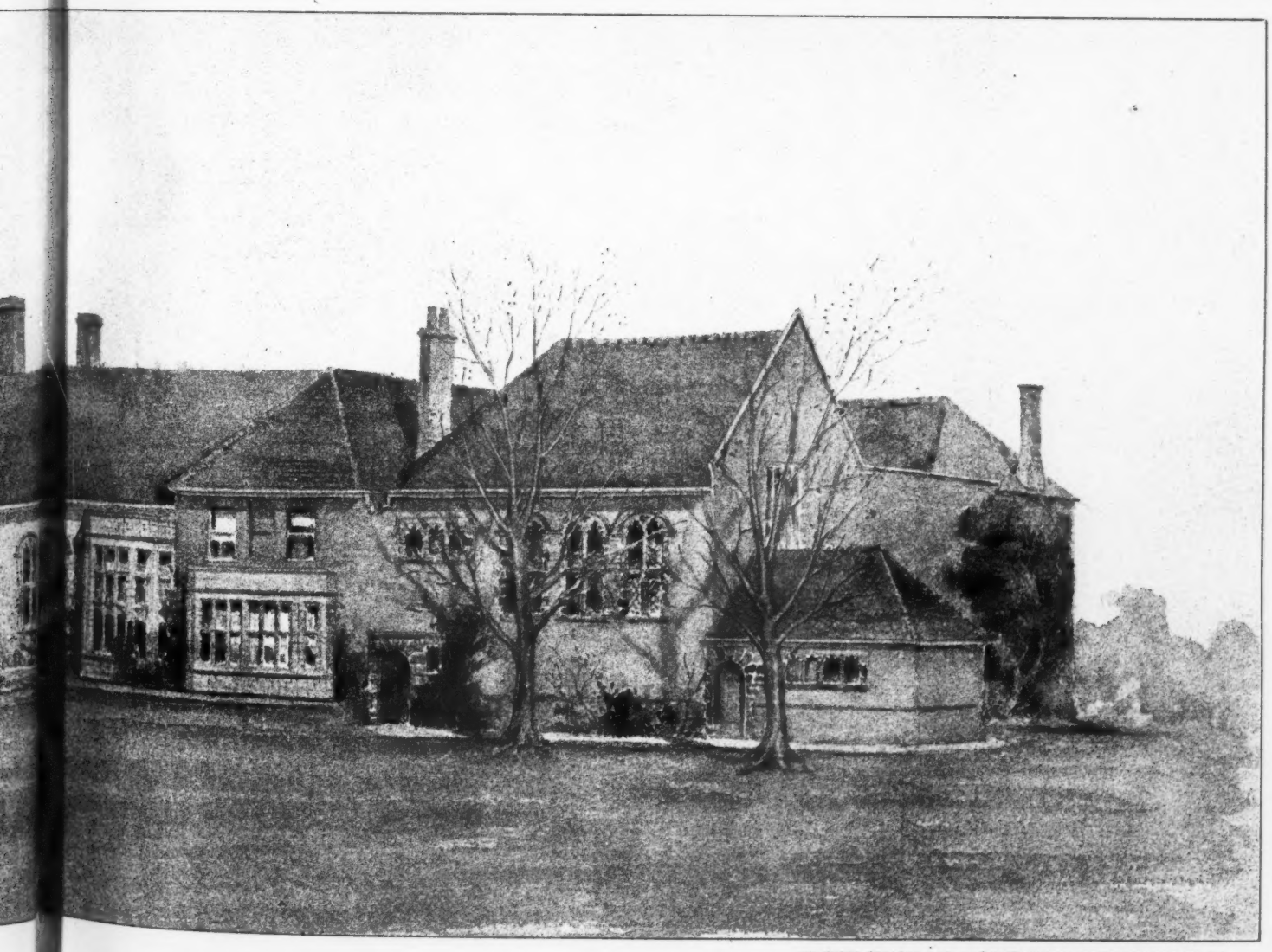

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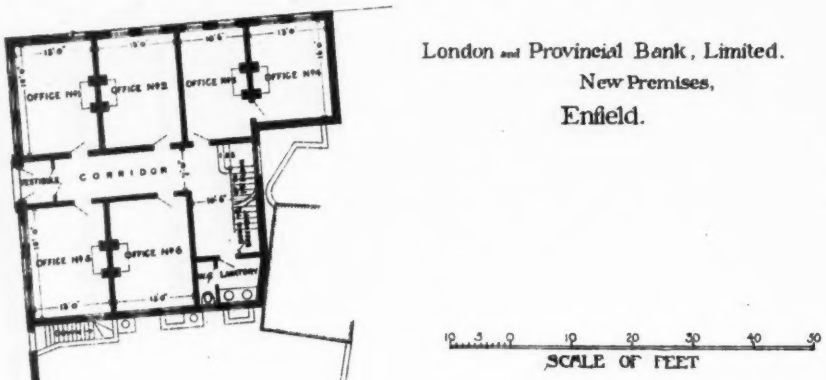
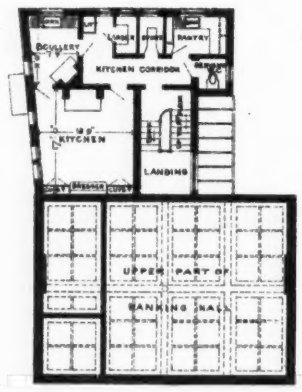
COLL[illegible]R. PAUL B. CHAMBERS, ARCHITECT

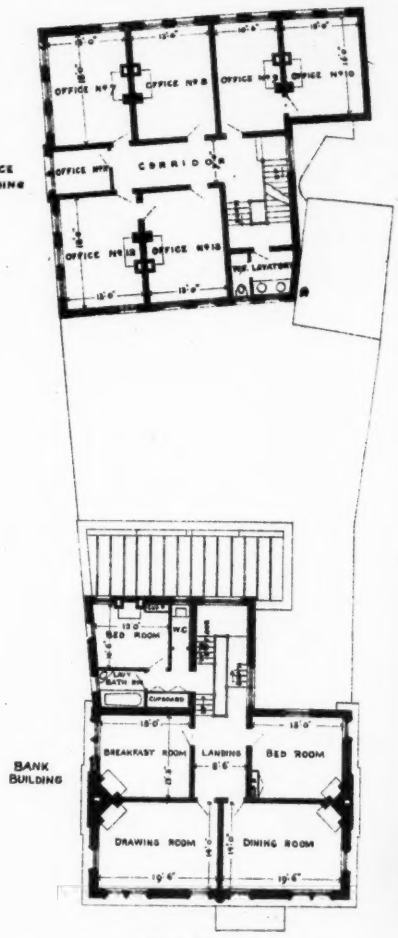
London and Provincial Bank, Limited.
New Premises,
Enfield.



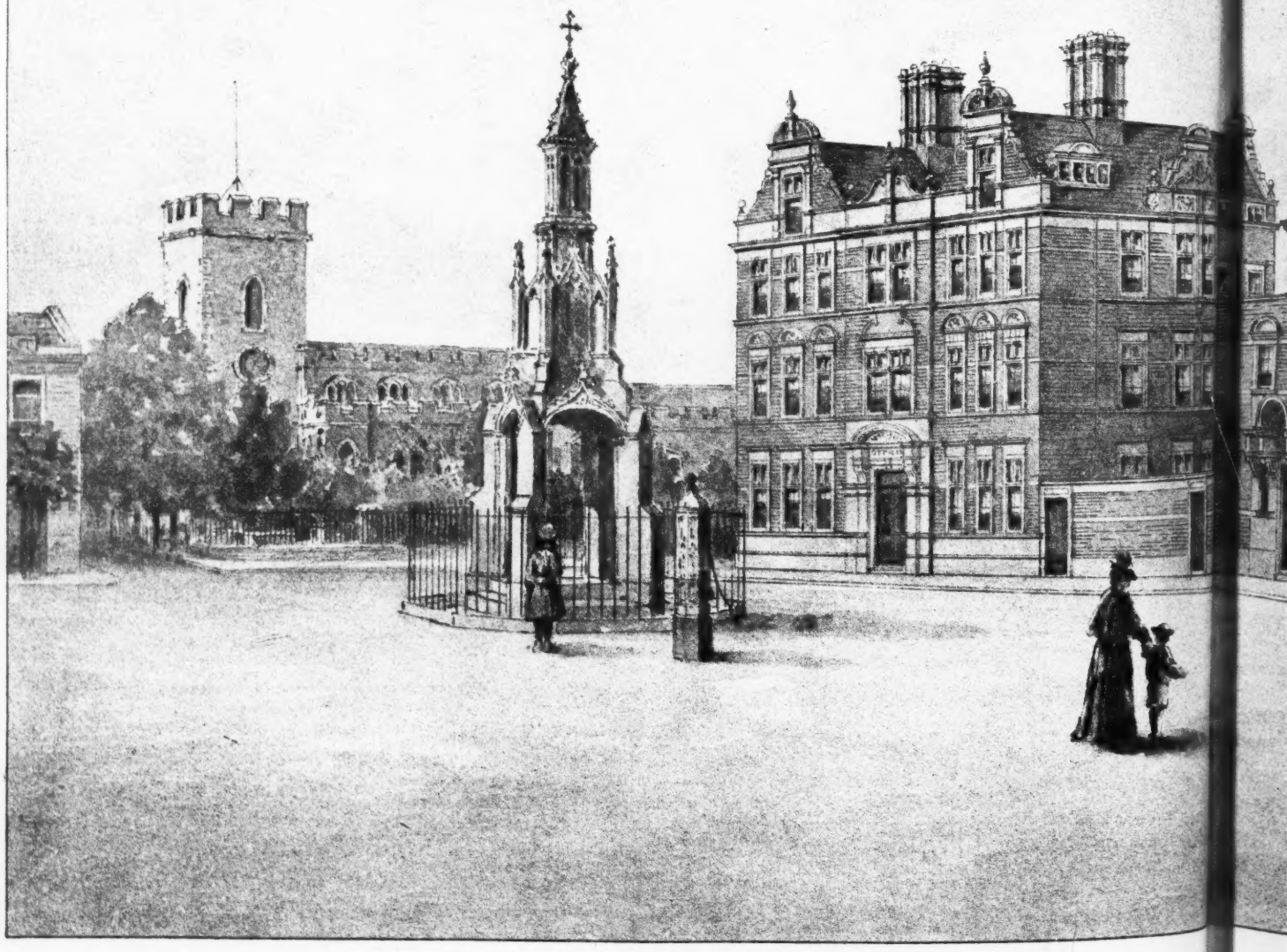
Ground Plan.



Mezzanine Plan.



First Floor Plan.



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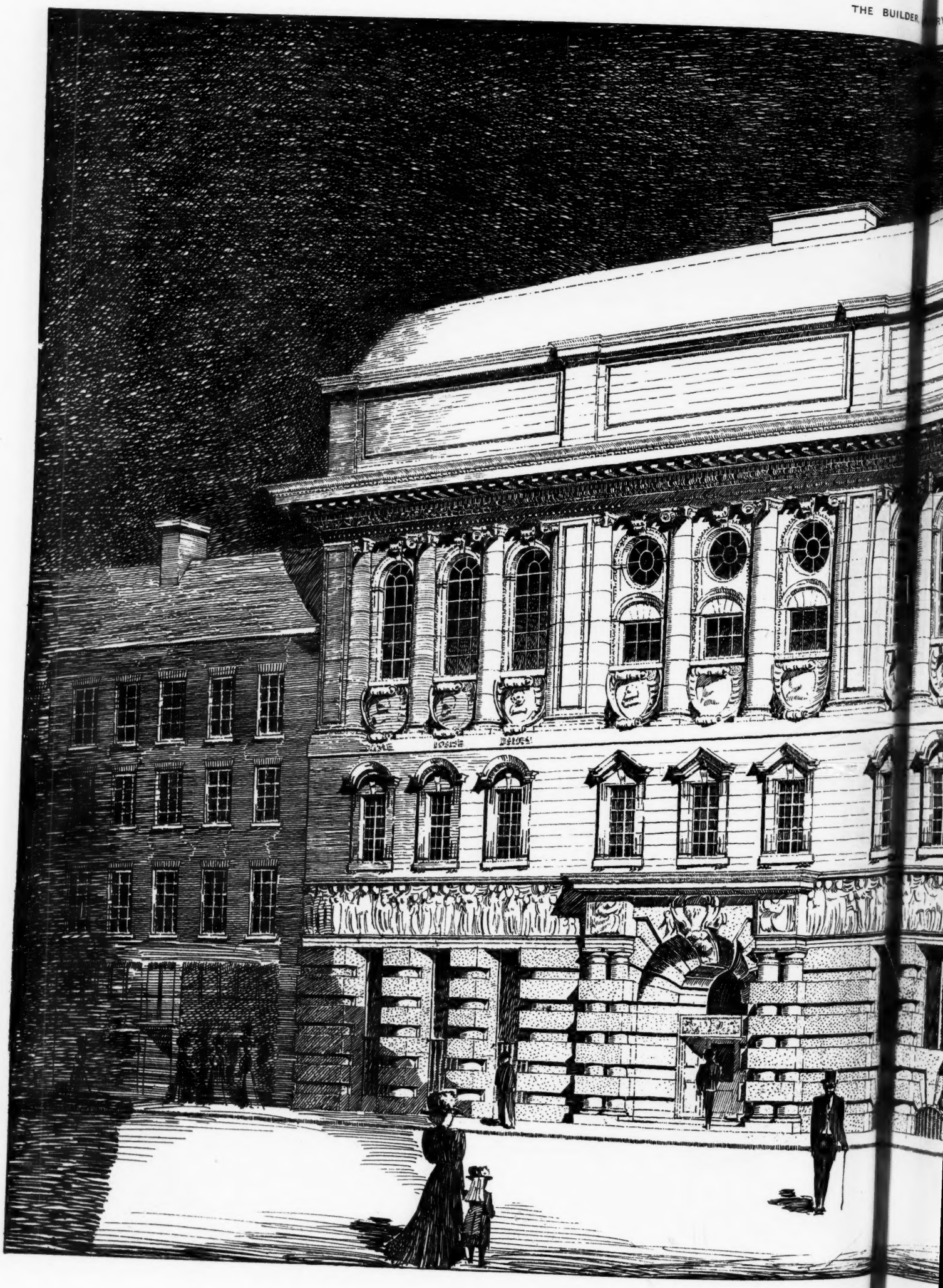
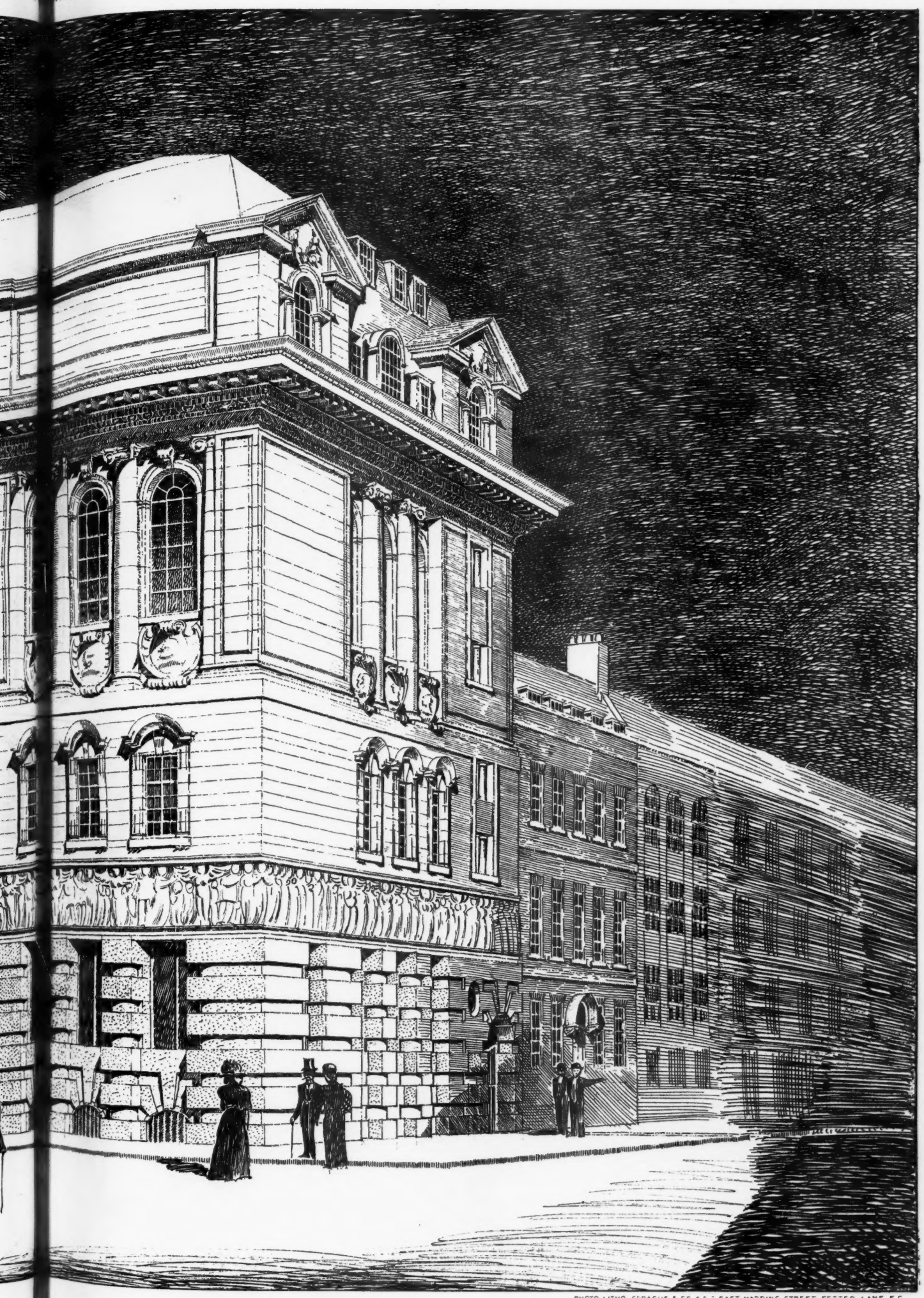
...OVINCIAL BANK, ENFIELD.—Mr. W. Gilbee Scott, F.R.I.B.A., Architect.



DESIGN FOR AN INSTITUTE OF ITECTS.—B



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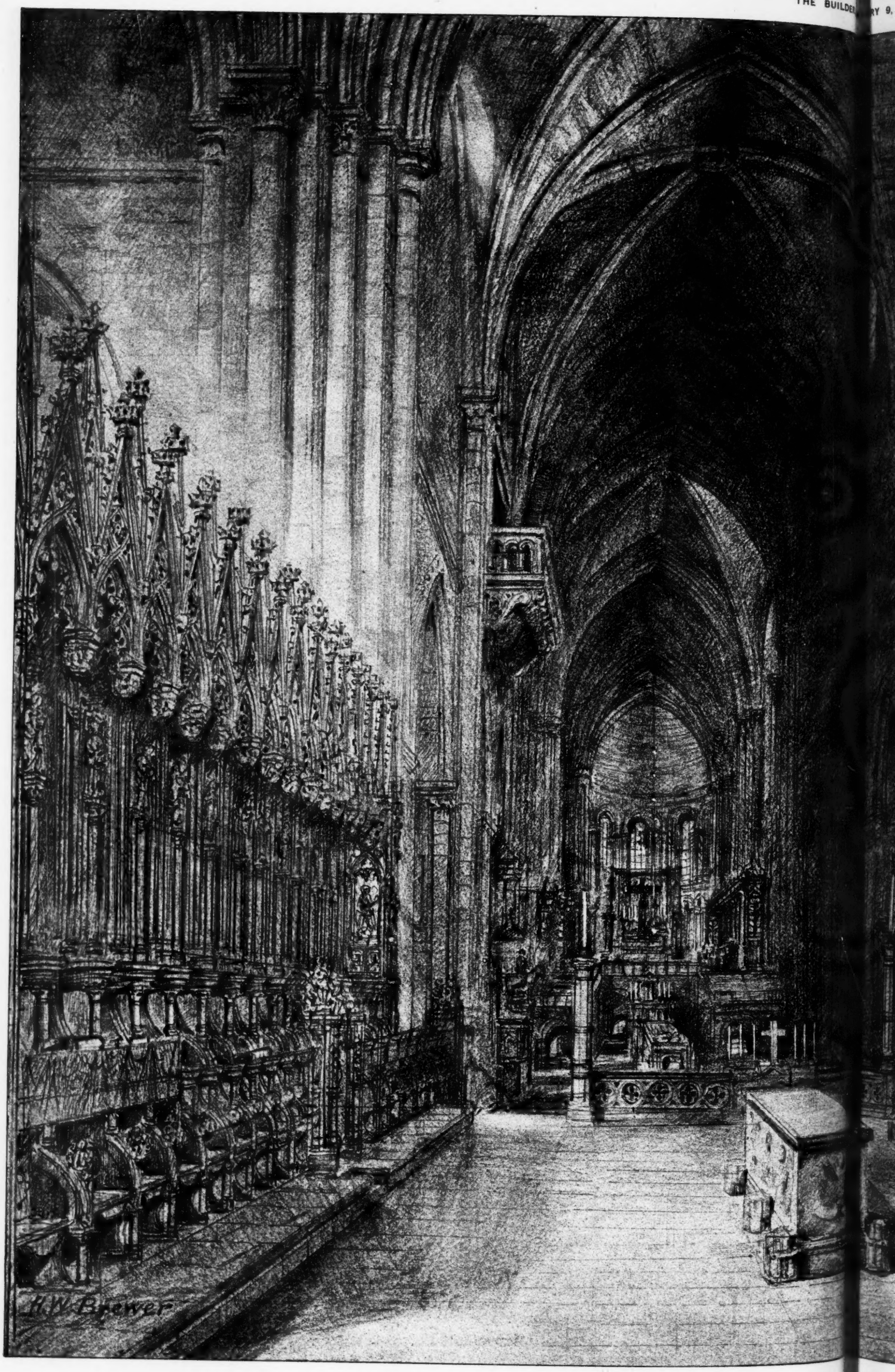
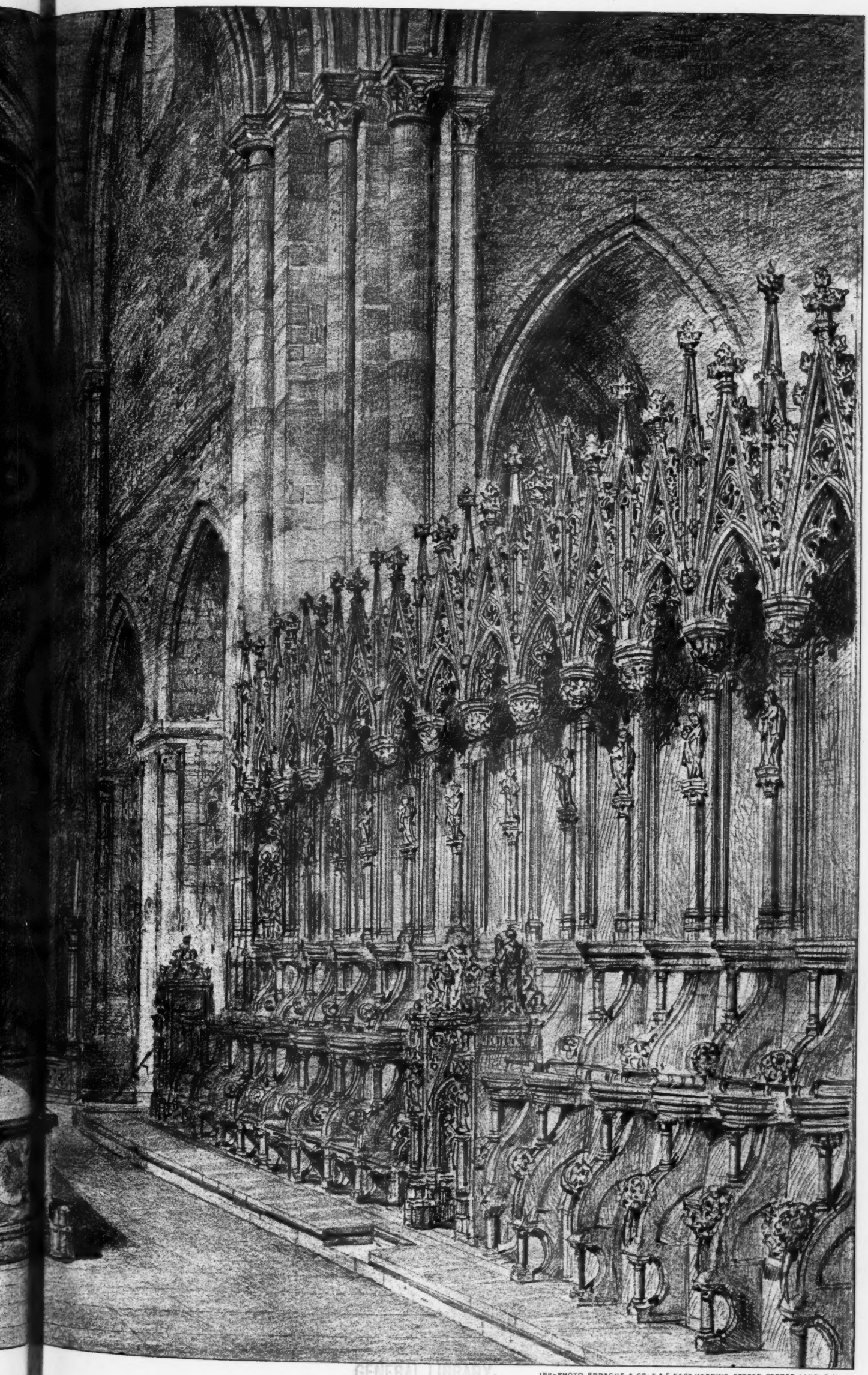
E OF [illegible]TECTS.—By Mr. Percy E. Newton.



THE WEST CHOIR, BAMBERG CA RAL.—D



G CA[illegible]RAL.—Drawn by Mr H W Brewer

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